THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation

INCORPORATING

The Railway Engineer · TRANSPORT · The Railway News

The Railway Times · Herapath's Railway Journal · THE RAILWAY RECORD.

RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 82 NO. 23 FRIDAY, JUNE 8, 1945

CONTENTS

	PAGE
Editorial Notes	557
Post-War Planning on Argentine Railways	559
"Nefarious Railway Activities"	560
Victorian Government Railways	560
British Railways Calling	561
Some Post-War Problems of German Railways	561
Letters to the Editor	562
Publications Received	563
The Scrap Heap	564
Overseas Railway Affairs	565
Power-Operated Doors for Railway Rolling Stock	566
Standard Military Railway Bridges—5	568
Personal	575
Transport Services and the War	577
Stock Market and Table	584

DIESEL RAILWAY TRACTION SUPPLEMENT

The June issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

"Encouraging Traffic"

IN our issue of May 25 we drew attention under the above heading to the unnecessary inconvenience to which the railway companies and public were being subjected through the Ministry of War Transport's ruling that relief trains must not be advertised except by way of notices at stations on the day of travel. We are gratified, therefore, to learn that this prohibition has been rescinded by the Ministry and the railways are now free to advertise such trains in advance in the manner which they consider most suitable.

Further, we understand that, subject to the very natural proviso that there shall be no interference in the movement of essential traffic, the companies have now been given a much freer hand in connection with running additional relief trains to enable them to deal with the summer traffic.

The Ministry is to be congratulated on these decisions, which will be extremely helpful both to the railways and the public. It should be appreciated, however, that the companies' depleted stock of locomotives and passenger carriages, and the large number requiring repairs will prevent anything like a normal summer programme of trains being run this year. Overcrowding of the principal main-line trains, therefore, again may be expected during the peak periods.

The diversion of additional labour to railway running sheds and workshops is a matter of great urgency, on which we understand that continual representations have been made by the companies to the appropriate quarters. It is to be hoped that this additional assistance will be forthcoming at an early date, otherwise it will be too late to assist the companies in meeting what will probably be abnormally high traffics during the summer.

So much depends on the early supply of this labour that it is clearly very premature for hopes to be raised, as they have been in certain quarters, of the early restoration of such facilities as restaurant or buffet cars and of the reintroduction of cheap fare facilities.

While on the subject of the relaxation of controls, we suggest the time has arrived when the Ministry might considerably reduce the number of sleeping-car berths which it controls in order to secure accommodation for persons travelling on Service or other Government business. With the cessation of hostilities in Europe and the necessity for restoring the country's normal activities at the earliest possible moment, there would appear to be a case either for making a substantial reduction in these priority reservations forthwith, or for reverting to the normal arrangements under which the railway companies alone were responsible for the bookings.

* * * *

Private Enterprise or a Servile State

Sir Clive Baillieu, President of the Federation of British Industries, speaking before the American Chamber of Commerce in London recently, gave a strong warning of the issues which depend on the outcome of the discussions as to the role of private enterprise as against Government activity in industry. He believed Government and private enterprise to be complementary and that, to succeed in solving post-war problems, they must operate as a friendly and understanding alliance. The price for accepting regimentation, control, and the perpetuation of the trappings of total war, would be the creation of a servile State. He did not believe British freedom would perish in the bogs and sands of doctrinaire socialism and bureaucratic control. There would have to be an orderly devolution of controls, but we should not hesitate to remind our political leaders that this war had not been fought to impose on ourselves a form of Neo-Fascism, nor to forge forever the fetters of wartime control. Private enterprise provided the best basis for a prosperous national economy. It had built the Commonwealth and Empire, and it had been responsible largely for the unique war production record of this country and of the United States. To regain our export trade, full scope would have to be given to initiative, the spirit of adventure, and readiness to meet changing conditions, which were the hall-marks of private enterprise, and which no State-controlled system could develop.

* * * * *

Slaves of Bureaucracy

Although certain types of Control are being relaxed or rescinded with commendable promptitude as the world war situation improves, there are still some grounds for thinking that a certain type of bureaucrat loves Control for its own sake, and would wish to continue restrictions on the liberty of the subject long after the need had passed, and probably indefinitely. For example, considerable publicity was given to the new Control of Engage-

ment Order and complementary orders, under the heading "Less Control of Labour," and yet a close scrutiny of the changes shows that in some respects the ordinary commercial employer is more restricted now than heretofore. It is no longer necessary to give notice to the Ministry of Labour of the termination of employment, but, from June 4, the engagement of men between the ages of 18 and 50 (inclusive), and women between 18 and 40 (inclusive), may be made only through the Ministry of Labour & National Service, unless the employment comes within one or two excepted classes. The restrictions on the employment of women are not new, although they were a wartime expedient that many feel might well be relaxed. It is even more difficult to understand the extension of the Control to such a wide range of men at a time when most employers are planning their postwar policy, and are already restricted severely by the interpretations which have been placed upon the Reinstatement in Civil Employment Act, which, however ever desirable in many of its aspects, is distinctly one-sided in relation to the young and inexperienced who have become adults while in the Services and for a time look like becoming costly pensioners to their employers.

* * * *

Mr. Churchill's Warning

Mr. Churchill dealt with some of the dangers of bureaucratic control, of which the restrictions we have just outlined are a manifestation, in the first of the General Election addresses which he broadcast on June 4. He said there could be no doubt that Socialism was inseparably interwoven with totalitarianism and the abject worship of the State. Liberty in all its forms was challenged by the fundamental conception of Socialism, which hungered for controls of every kind as if they were delectable foods instead of wartime inflictions and monstrosities. Because it could not suffer free expression of public discontent, a Socialist Government conducting the entire life and industry of this country would have to fall back on some form of Gestapo, which would nip in the bud opinion as it was formed. It would gather all the power to the supreme party and the party leaders, rising like stately pinnacles above their vast bureaucracies of Civil Servants, no longer servants and no longer civil. Plans for curtailment of parliamentary procedure had been voiced by Mr. Herbert Morrison, under which laws would be passed simply by resolutions of broad principle, and afterwards left by Parliament to the executive and to the bureaucrats to elaborate and enforce by departmental regulations.

* * * *

Overseas Railway Traffics

After a general rally in Stock Exchange prices there has been a slight improvement in the securities of British-owned railways in Argentina, chiefly in some debenture issues. The Central Argentine is paying interest for the half year to June 30 on its 4 per cent. debenture stock at the due date. Traffics of Argentine railways for the 47th week of the financial year have been good for the four principal lines, as will be seen from the accompanying table, and increases for the week are shown of £5,731 on the Entre Rios and of £3,437 on the Argentine North Eastern, bringing their respective gains in the aggregate to £196,506 and £144,150. For the first 21 weeks of 1945 the gross receipts of the Antofagasta amount to £640,240, an increase of £52,100. The Leopoldina records a slight increase of £757 for the 21st week, but its aggregate to date is £10,235 down.

	No. of week	Weekly traffics £	Inc. or dec. £	Aggregate traffic £	Inc. or dec. £
Buenos Ayres & Pacific*	47th	135,000	+13,125	6,461,500	+1,068,000
Buenos Ayres Great Southern* ...	47th	182,625	+27,438	9,830,875	+1,046,125
Buenos Ayres Western*	47th	63,813	+9,938	3,319,375	+515,313
Central Argentine*	47th	174,612	+17,175	8,483,734	+876,641
Canadian Pacific	20th	1,217,000	−4,200	23,537,400	−187,800

* Pesos converted at 16 to £

Aggregate gross earnings of the Canadian Pacific Railway from January 1 to April 30, 1945, amounted to £20,006,400, a decrease of £113,800 in comparison with the corresponding period of 1944. The net earnings of £1,806,000 fell £928,400.

* * * *

State Ownership of Transport

One of the principal issues on which the forthcoming General Election will be fought will be the nationalisation of certain basic industries, including transport. An article in *The Financial News* by "a well informed transport correspondent" points out that very few in any of the political parties have mastered the technical facts on which so important a decision should be made, or could debate the issue before an informed audience without being made to look ridiculous. If transport were owned by the State, it is pointed out, it would become a potent implement for controlling the entire national economy—for example, by differential rates—and at the same time the voting power of over a million employees and their dependants could be marshalled on the side of complete socialisation by promises of higher wages. The article refutes any suggestion that transport under private ownership has been inefficient, and points out that between the wars the main-line railways spent £170,000,000 on new rolling stock alone; the desirability of electrification, for example, depends on whether the outlay could be justified commercially in relation to its cost—a point which is not mentioned by the Labour Party. In all, the railways spent £450 millions in the inter-war period in modernising their undertakings.

* * * *

Co-ordination Problem Not Solved

The problem of the co-ordination of transport would remain, whoever the owner, but if any taxpayer believes that there could be co-ordination by socialisation, without an extra burden on himself, he would probably be disappointed. It is pointed out that there have been ominous examples during the war of political interference and anticipatory Labour claims are now being put forward in some sections of the industry which, if conceded, would make any commercial undertaking bankrupt, with no hope of recovery except at public expense. The day may come when, for technical transport reasons, the nationalisation of the industry may be desirable in the national interest, but the author of the article holds that there are at least 10 or possibly 20 years of work to be done before that issue is ripe for serious consideration. Premature action now, for political reasons, inevitably would have to be paid for by the taxpayer, and in this matter in the long run the interests of the present transport owners and the taxpayers are identical. Meanwhile, essential work is being held up while an issue is being put before the electorate on arguments which, for lack of knowledge, are not going to be exposed by any of the political parties.

* * * *

Avoiding Delays in Publication of Papers

The current issue of the *Journal* of the Institution of Mechanical Engineers contains an interesting announcement to its members relating to delays which have occurred in the final publication of certain of its papers and the proposals to expedite matters. Although the Institution has been able to produce advance copies of papers for discussion, without much difficulty, the real trouble began when it was desired to incorporate these papers finally into the *Proceedings*. It has always been the Institution's custom to issue all its papers and discussions to its entire membership, which is now around the 20,000 mark; and thus every page of an advance copy of a paper involved the consumption of 20,000 pages when that paper appeared finally in the *Proceedings*. A change from monthly publication (actually ten issues a year) to quarterly, did little to ease the situation, in spite of the saving in cover paper. Now, however, the Council considers that to print some 20,000 copies of everything delays final publication so much that it has put forward its new scheme —limited publication to those definitely interested. In future there will be two main categories of papers: those of general appeal, and those of interest principally to specialists in various fields. The former will continue to reach all members in the quarterly issues of *Proceedings* (which are continuing); papers dealing with more specialised topics will be printed in much smaller numbers, and will be issued (free) only on application. It is expected that the amount of paper needed under the latter system will be about one-tenth of what would be required for issue to the whole membership, so that all papers in future can be discharged much more quickly.

* * * *

Power-Operated Doors for Rolling Stock

It is sometimes difficult to realise that it is a quarter of a century since Londoners had their first experience with power-operated doors on the London Electric Railway. This unofficial Silver Jubilee was marked by a paper presented by Mr. A. F. Collins before the Institution of Locomotive Engineers at its meeting on February 21. Mr. Collins has probably had a wider experience in this field than any other engineer in the country. He is a member of the staff of the Chief Mechanical Engineer of the London Passenger Transport Board, which is the largest user of power-operated doors in the country. The paper itself was a remarkably complete survey of a highly specialised subject, and it is to the author's credit that he has succeeded in making every aspect interesting. We print an abstract of the paper elsewhere in this issue. It is a far cry from the manually-operated gates existing on most lines up to about 1923 (and on certain routes until much later), which the author used as a starting-point of his review, to the type introduced just before the war on London Transport "open section" lines, which provided the jaded passenger on these routes with a new thrill, by enabling him to open the door himself ("under the control," as the cautious official wording has it, "of the guard"). It was indeed regrettable that with the enforcement of the blackout from Sep-

tember, 1939, this device, while still a novelty, had to be made inoperative. In congratulating the author on his work in this sphere, we look forward to the time when this device, and possibly others now taking shape in his mind, will soon be on the active list again.

* * * *

Another Case of the Releasing Key

Colonel A. C. Trench's report on the collision at Esher, Southern Railway, on January 28, summarised elsewhere in this issue, shows that, however it originated, some irregular working of the Sykes lock-and-block led to a fast electric train to Portsmouth being admitted by clear signals to a block section occupied by a steam train to Bournemouth. This had been stopped at the through line home signal at Esher, without the signalman realising it was there. He subsequently, under the impression that he was accepting that very train, plunged on the Sykes apparatus, in reality for the electric train, which, running at some speed, overtook the Bournemouth train as the latter was moving away on the signals then lowered. Colonel Trench considered more than one possible explanation as to how this came about, but concluded that previously, shortly after a light-engine movement on the parallel local line, the signalman had jumped to the conclusion that he had, when accepting that engine, plunged for both lines by mistake. This led him to resort hastily to the key, although he emphatically denied having touched it, with the result that he plunged again irregularly. Although the report thus places the main and very serious responsibility for the collision on the Esher signalman, the man at Hampton Court Junction is not absolved from blame. Care in the exchange of block bell signals should have provided an additional safeguard, and Colonel Trench is convinced that " out of section " was never sent for the steam train. Some confusion may also have arisen from the existence of simultaneous movements on parallel down lines.

* * * *

Can the Key Problem be Solved?

Although the disappearance of the lock-and-block under the gradual extension of modern methods has diminished interest in the problem of the releasing key, we think this case justifies some reference to it. In this instance the key was used—so Colonel Trench believes—to reset the plunging portion of a Sykes instrument, that is to say, that part which controls the working of the block section from the signal box in the rear. It is evident that there is no danger in using the key for its proper purpose, namely, when a train is legitimately cancelled. All that is then called for is to prove that the signal in rear is properly relocked before this can be done, and this in the later cancellation arrangements used with Sykes block, has been accomplished. It is in use at some places and has been applied to other types of lock-and-block. If, however, acting under a delusion, shared or not by his colleague at the adjacent box, a signalman uses the key, or cancelling button where provided, after a train has entered the section, a position of the utmost danger is created, as another train can be admitted to the section not, be it noted, under caution but under false clear running signals. When, however, a train enters a Sykes block section it actuates the treadle of the section signal back-lock and thus proves that an obstruction exists. This action should, we consider, long since have been employed to stop all use of the release key at the box in advance until such train has been properly disposed of.

* * * *

Behaviour of the Electric Rolling Stock

Colonel Trench found that the collapse of the trailing end of the underframe of the leading coach of the electric train was an unusual feature in the Esher collision, calling for consideration. This part of the frame had its headstock buckled and forced in for a distance of 18 ft.; the sole bars were crumpled up with it, and the report points out that the fact that the impact is taken by the leading end on side buffers and at the trailing end has to be transferred to a centre buffer, involves a triangulated framework at the trailing end, with raking struts. These have to be set at a flatter angle than they would be, if the designer were free to do as he would prefer. The primary failure, says the report, occurred most likely in the tie bars to these struts, and although the type of underframe has been in use for 20 years and no such weakness has been revealed in collisions in that time, the desirability of increasing the cross section of the tie bars of the end triangulation was discussed with those concerned. The stresses set up in a collision involve too many uncertain factors to enable any useful calculation to be made, but the distortion caused to all the cross members over the whole length of the underframe showed impact stresses to have been distributed over its entire structure. Colonel Trench holds that the question of strengthening the tie bars should be looked into, but does not feel justified in making a definite recommendation on the point.

Post-War Planning on Argentine Railways

THE recent appointment of a senior officer to co-ordinate the post-war plans of the British-owned Argentine railways, indicates that the companies do not expect the termination of their mission as private undertakings on January 1, 1947, when some of their most important concessions under the Mitre Law will expire, notably the privilege of importing, duty free, materials for the construction and operation of their systems. Nor do the numerous licences to design and produce prototypes of peacetime equipment issued by the Board of Trade to manufacturers of transport material, among them locomotive builders, convey the impression that the British export trades regard at all unfavourably their prospects of recovering their erstwhile supremacy in the South American markets. But so far as the financing of British-Argentine railway enterprise is concerned, there are no indications yet as to the part to be played by the city of London, without which the execution of post-war programmes may not proceed as quickly as might be desired.

For some years before the outbreak of war the Argentine railways had to restrict much-needed renewals and modernisation projects because of the impossibility of financing them. Intense road competition, adverse foreign exchange rates and the disinclination of the government to authorise sufficiently high scales of rates and charges to permit the companies to provide adequately for even indispensable renewals of line and equipment debarred them from maintaining their services at the high degree of efficiency to which the public were accustomed.

Recently, the railways have found themselves faced with added impediments to recovery. The National Transport Committee—an advisory body set up by the government—has drafted a law which will concede important advantages to road operators, if approved, and has caused considerable uneasiness among the railway managements. During the war, the greater part of the public passenger and goods services by road have ceased to function, because of the inability of operators to obtain spare parts, rubber tyres and petrol. Formerly, more than 95 per cent. of the road motor equipment was imported from the United States and tyres were manufactured locally by American financed factories, for the most part with imported raw material. The almost total suspension of public road transport has thrown an unaccustomed burden on the railways, with which they are unable to cope, through lack of imported coal and material for maintenance and renewals. The difficulty of keeping rolling-stock in service and the preferential use of an abnormal proportion of carrying capacity to transport firewood to make good the shortage of coal have caused long delays in moving goods traffic and passenger services of all kinds have had to be stringently curtailed. Sleeping berths on night trains are obtainable only by reservation well in advance of the desired dates and it is frequently necessary to wait a month before accommodation is available. Hence, the reinstatement of normal transport services has become an urgent national demand and, with the conclusion of the war with Germany, the motor trades of Great Britain and the United States have commenced intensive preparations to revive their exports. The American producers will resume shipments under the great advantage that they possess nation-wide sales networks and equally complete servicing organisations. Their agents are to be found in the remotest parts of the republic and are able to offer complete stocks of spare parts as well as expert technical advice regarding the performance of their vehicles. Hitherto, few representatives of the British motor trades have made serious attempts to enter the Argentine market in competition with American manufacturers, which is surprising in view of the considerable advantage which British exporters possess over other manufacturing nations by virtue of the important fact that Great Britain is, by far, the largest buyer of Argentine exports. Consequently, assuming equal quality and price, it is in the interest of the Argentine nation to purchase its imports from those who buy its exports.

Not long after the re-introduction of road services, aircraft manufacturers will enter the Argentine transport market. So far as internal travel is concerned, regular air services will be comparatively new to the Argentine public. Before 1939, practically the only local passengers conveyed by air were those carried by international air lines. Improved travel developments are inevitable in a country of great overland distances, such as Argentina, and the day is not far off when journeys by night train will be unusual. Already, the British aircraft industry has shown that it has no intention of forfeiting the leading position which it has earned for itself during the war and the principal shipping companies operating in the South American trades have

XUM

co-operated by forming a joint air line to operate between Great Britain and Latin America as soon as the necessary permission to do so can be obtained from Parliament.

The British-owned Argentine railways will not regard with complacency the intensification of road motor and aircraft imports. Nevertheless, they will realise that if such supplies are not purchased from this country they will be obtained elsewhere, chiefly from the U.S.A. Hence, omission on the part of British motor and aircraft manufacturers to secure a share of the business offering would mitigate in no way the difficulties which confront the railways and would prejudice the economic position of the people of Great Britain, to whom a noteworthy expansion in exports is of paramount importance.

* * * *

"Nefarious Railway Activities"

IN view of the conflict of political viewpoint as to whether transport should continue to be managed by private enterprise or should be subjected to some form of "nationalisation," particular interest attaches at the present time to the experiences of a large group of passenger road transport undertakings in their co-ordination arrangements with the main-line railways, as expressed by Mr. J. S. Wills, the Chairman, in his address to the shareholders of the Yorkshire Traction Co. Ltd. on May 3. That company was holding its 44th annual general meeting, as it had its origin as long ago as 1902, when it was formed by the British Electric Traction Co. Ltd., for the construction of the Barnsley electric tramways. These tramways, supplemented later by motorbus services, continued in operation until the summer of 1930, by which year the bus services were of far greater size and importance than were the tramways. In the same year, 1930, the London Midland & Scottish and the London & North Eastern Railway Companies became substantial shareholders in the company, and ever since then have been represented upon the board. The Chairman said he had often heard it alleged against the railway companies that they bought their way into rival forms of transport with the object of stifling competition. He had been on the boards of this and other bus companies in which the main-line railways and the British Electric Traction Co. Ltd. had been in partnership for fifteen years and he had seen no sign of any such nefarious activity. On the contrary, their railway colleagues had always done all they could to promote the growth and efficient operation of bus services, regardless of their competitive effect upon the railways. They had only wanted to be satisfied of one thing, namely, that the services were useful to the public. The railway companies had made station yards available for use by the buses of associated companies; they had rented or sold land and premises at reasonable prices for use as bus stations, garages, waiting rooms, or booking offices; on railway premises they had advertised bus services; they had agreed readily to inter-availability of return tickets. On the bus side, it had been found possible to extend many reciprocal facilities to the railway companies. The result of this alliance between road and rail had been that the services of both had been co-ordinated to the advantage of all who travelled in the area served. In normal times, a Standing Joint Committee of senior officials of the Yorkshire Traction Company and the two railway companies met frequently to consider how this willing co-operation could be developed still further.

* * * *

Victorian Government Railways

THE report of the Victorian Railways Commissioners for the year ended June 30, 1944, shows that gross revenue from railways, electric tramways and public road motor services was £15,974,634, the second highest in the history of the Victorian Government Railways, and £1,145,589 less than the record revenue for 1942-43. The surplus was £448,136, or £339,566 less than the record surplus for the previous year. The decrease in earnings, which occurred principally in respect of passenger traffic (£482,368) and goods and livestock traffic (£655,486), was mainly the result, the report states, of the changed conditions in the Pacific war zone, which led to a substantial decline in the volume of defence traffic; the drastic reductions which had to be made in passenger and goods services on account of the inadequacy of the coal supplies available for railway use; and other causes arising out of the war. Working expenses amounted to £13,295,896, a decrease of £823,045 compared with the previous year. The main items which played their parts in the reduction were (in round figures) decreases in the contribution to the railway renewals and replacements fund (£750,000), in Commonwealth war damage contributions (£35,000), and in national security expenditure (£30,000); writing-off in the previous year the cost of certain sections of line which were abolished (£140,000); and reduced provision for deferred ordinary way and works maintenance and for accrued staff leave (£463,000). On the other hand, higher salaries and wages under awards, etc., accounted for an increase of £180,000; coal costs for one of £121,000; additional maintenance work (Way & Works and Rolling Stock Branches) for one of £223,000; and ordinary and long service leave, extra day (leap year), and overtime payments for increases of £90,000, £25,000, and £72,000, respectively.

The balance of the decrease in expenditure (£116,000) is more than accounted for, the report states, by the operating savings resulting from the reduced volume of traffic. The remarkable increases in traffic in the earlier years of the war did not entail a proportionate increase in operating costs, as a substantial amount of the additional business (particularly passenger and high-grade goods) was effected by ordinary trains at little extra cost; but now, when a progressive decline in traffic is taking place, it is impracticable to reduce operating expenditure in anything like the same ratio as the fall in revenue. A summary of the financial results for 1943-44 compared with those for the preceding year is given below:—

	1942-43 £	1943-44 £	Inc.(+) or dec.(−) £
Gross revenue—			
Railways	17,029,660	15,881,887	−1,147,773
Electric tramways	84,096	86,799	+ 2,703
Public road motor services	6,467	5,948	− 519
Total	17,120,223	15,974,634	−1,145,589
Working expenses—			
Railways	14,071,318	13,232,025	− 839,293
Less charged to special funds:			
Trust fund railway works (defence purposes)	2,452	722	− 1,730
Federal aid roads and works grant	118	—	− 118
Surplus Revenue Act	20,000	17,886	− 2,114
Commonwealth—State air raid precautions account	8,711	—	− 8,711
	14,040,037	13,213,417	− 826,620
Electric tramways	58,403	62,703	+ 4,300
Public road motor services	20,500	19,776	− 724
Working expenses charged to railway revenue	14,118,941	13,295,896	− 823,045
Net revenue	3,001,282	2,678,738	− 322,544
Interest charges and expenses (including loan conversion expenses)	1,889,545	1,901,656	+ 12,111
Exchange on interest payments and redemption	197,674	201,321	+ 3,647
Contribution to the National Debt sinking fund	126,361	127,625	+ 1,264
Total interest, exchange, etc.	2,213,580	2,230,602	+ 17,022
Surplus	787,702	448,136	− 339,566

The report states that, although limited progress is being made with the preparation of plans for post-war works, the serious depletion of the technical staffs makes it impossible to proceed at anything like the rate desired. Investigation of various matters associated with the unification of Australian railway gauges is being given preference to a large extent. The lessons of the past five years, it is pointed out, have amply demonstrated, in Australia and many other countries, the paramount importance of an efficient railway system, capable of rapid expansion to meet a national emergency. "It is, therefore, essential," the report continues, "so long as railways remain an indispensable means of transport both in peace and in war, that they be maintained in a sound condition, and that the development of other forms of transport, whether by road or by air, should be in their proper economic spheres and not at the expense of railway efficiency." From the aspect of general state finance, it is added, that consideration assumes even greater importance since the Commonwealth Government is now the sole taxing authority.

Under the heading of road competition, the report states that in normal times there would have been welcomed the opportunity afforded by the greater control of road transport to refute many of the arguments which commonly have been advanced in favour of duplication of service; unfortunately, difficulties created by the shortage of coal and of qualified manpower have prevented the railways from demonstrating their potential capacity. It is, nevertheless, significant, it is pointed out, that, despite those serious handicaps and the inability to build up resources in peacetime because of the inroads of competition, a much greater volume of traffic has been handled in the war years than during any other period of railway history.

Turning to the subject of air competition, the Railways Commissioners point out that the popularity of the air for intercapital journeys already has been established, and that post-war developments no doubt will include additional services for long journeys between other large centres of population. They consider, however, that such developments on routes competitive with the railways should not be fostered by subsidies, hidden or otherwise. They also think that, just as harbour dues are levied against shipping, civil air services should bear a due proportion of the cost of ground and other facilities now provided at the public expense. The considerations which have forced governments of almost all countries to establish some measure of control over road transport apply equally to commercial air services; without some such control, it may be expected that the history of competitive road transport after the last war will be repeated by air competition after the present war. The Commissioners urge that, before plans for the future of air transport are allowed to advance too far, steps should be taken to establish adequate control over the future development of air transport.

* * * *

British Railways Calling

NOW that the notes of the last "alert" and "all clear" have faded, one sound closely associated with the years of European war remains. It issues from 8,115 loudspeakers at 181 railway stations up and down the country, answering the unspoken questions of the crowds which must, or will, travel by train. Station loudspeakers had played a part before the war, but chiefly on occasions of heavy traffic for race meetings, Wakes weeks, and the like. To-day their not unpleasing tones have become a customary accompaniment to normal journeys, and the passenger who once stood in the concourse glancing wildly round for a peaked cap and official face to answer his queries, now waits in patience staring confidently towards the roof.

Women announcers are employed for the most part, officially because their voices have been found more suitable than men's, but as their function is not merely to inform but sometimes to admonish, it may be that subconscious memories of nursery days beget a quicker reaction to the warning to stand clear of the platform edge when delivered in tones akin to those which once warned us not to fidget at table.

Since the war most things have become mobile, from women to pre-fabricated ports, and therefore it is not surprising that the railways have supplemented their permanent loudspeaker installations with others which can be transported and set up where required. Progress in the design of amplifiers has enabled the volume of sound from a loudspeaker to adjust itself automatically so as always to be audible above extraneous station sounds. It is therefore unnecessary for the announcer to shout, and shouting is not only unladylike, but not conducive to intelligibility, as experience with a telephone will show.

Let it not be thought that loudspeaker announcing is one of the arts which may be acquired without training, such as operating a railway system or nationalising the banks. The Southern Railway, for example, has appointed an adviser in diction and elocution, and requires its announcers to pass tests. If in the heart of a Surrey pinewood we hear fairy voices murmuring "how now, brown cow, feeding in the green, green grass," we shall know that they will soon boom cheerfully at us from the rafters of Waterloo, directing us to Padstow, Bude, and Torrington. We shall remember, too, that it was a voice which must have taken top marks in elocution and diction, with honours in *sang-froid*, which used to tell us that the imminent danger signal had sounded on the near approach of a flying bomb, shaming us by its even tones into at least an appearance of nonchalance as we discreetly hastened our steps towards a friendly subway, where we tried to look as if to stand underground while our train was going out overhead was our normal practice.

Policy differs between some of the groups as to the approved accent. Whereas the L.N.E.R. prefers to speak with a standard voice, the L.M.S.R. encourages the retention of regional peculiarities, thus (we hope) combining intelligibility with local colour. Frequenters of music halls, at least, should be in no doubt about their arrival at Wigan, Blackpool, Manchester, or Glasgow. A less individual note is struck by London Transport, which informs the traveller that he had burrowed to the heart of the Commonwealth by means of a recorded voice which begins automatically to call "Westminster" as trains approach.

Ample recognition of the convenience of loudspeakers to travellers has been accorded in the general press, but we should like to add that they must add considerably to the instruction and pleasures of the small boys whom none of the vicissitudes of war, nor the passing of the gallant heraldry of streamlined trains in blue and silver, have deterred from buying platform tickets and collecting engine numbers on Saturday afternoons. It is they who first collect their wits and disperse to new vantage points when it is announced that the 4.50 will arrive at platform 6 instead of platform 4. Perhaps for their further information and delight we shall one day hear another wartime custom carried on, and the announcer will say, "Here is the 10.30 a.m. train to Leeds, Bradford, and Harrogate, and that is Driver Jones of Kings Cross shed at the regulator."

Some Post-War Problems of German Railways

By Dr. J. M. Freud

THE traffic through the now devastated territory which has only recently been the German Reich is a problem of outstanding importance. Several liberated countries depend for their economic reconstruction entirely on the opening of railway communications with the ports of Western Europe. The problems connected with this reconstruction are mainly technical and highest priority will doubtless be given to the repair of the main German railway lines by the powers controlling the different zones of occupation. As soon as traffic again rolls normally through German territory, other, commercial and economic, problems will arise. With one of them, the problem of freight rates, I would like to deal here.

The German railways always made extensive and very carefully planned use of the powerful position they commanded by their geographical situation in the centre of Europe. In fixing railway tariffs for certain routes, for different commodities, in granting benefits and rebates under certain conditions, they were able to dictate routes for through traffic as well as for traffic inside the frontier regardless of mileage. A classic example of such policy was the battle of freight rates—Hamburg *versus* Trieste—fought in pre-war times between Austrian and German railways in which battle Germany succeeded in getting hold of Austrian export traffic, which by geographical distance should have fallen to the Mediterranean port, then in Austrian hands and favoured by the Austrian government.

The economic instrument of railway freight rates is not only powerful, but also very flexible, and by its use much more complicated aims could be achieved than the snatching of transport from other railways by under-cutting freight rates. When—for instance—Germany had an economic interest that a certain neighbour should export through German territory raw timber only, but not boards or beams, she could enforce her will on the exporter by adjusting the freight rates for the commodities in question accordingly. By influencing a neighbour's facilities of transport his whole range of production could be altered and economic dictatorship could be exercised. Many more examples of the use of freight rates in economic politics could be cited. There were big factories—the sugar refineries—for which mattered not the actual distance from and to their source of raw material and their places of shipment for the manufactured product, but the freight rates and rebates granted by the railways. This overwhelming power of railways was due to the geographical situation of the continent—a reason why people used to insular conditions might easily fail to grasp its importance. It should be understood that the position outlined applied to staple-goods only, in which the cost of transport constituted a major proportion of the market value, and that, under peace conditions, international agreements partly limited the misuse of economic power.

With such limitations, the German railways have been, and could again be in the future, the key to the economic domination of Central Europe. This key, now in the hands of the powers of occupation, could be used very effectively. A control, for instance, of the output of factories and mines, exercised by railway transport, would work out much easier and cheaper than any other organisation which could be built up. As for many reasons Germany will not be able for some time to run heavy goods traffic on her roads, a control of railways would come very near to full control of her total industrial output.

I would like to add that, although the first task of repairing the destroyed railway lines could be successfully accomplished even locally by different authorities working fairly independently of each other, the use of railways for purposes of economic supervision could be made only by a central authority for the whole network of Germany's railways.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Locomotive Cab Comfort

6, Armitage Road, Birkby,
Huddersfield. May 30

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article contained in your May 18 issue on a notable advance in cab comfort rightly directs attention to the advantages of obtaining a clear view from the cab in both directions. On examining the illustrations on page 498, it seems doubtful, however, whether the driver, in fact, can see his road except when running on straight track, of which there is very little between, say, Nine Elms and Waterloo.

As shown in the top right-hand illustration, on a curved track the look-out is tangential to the curve and not along it. Furthermore, the driver is some thirty feet away from the aperture through which he observes the road and, as the area of observation is inversely proportional to the distance from the aperture, his view can hardly be as excellent as one might be led to believe.

Again, it is doubtful whether the long observation troughs contribute to streamlining as, when running at speed in the forward direction eddy-currents will be set up in them. The tender windows, which normally appear superfluous will then serve to prevent the coal dust, already collected in the troughs, from blowing into the cab and this should certainly be conducive to cab comfort, provided the glass is intact.

Perhaps the most striking feature of the illustrations is the position of the ejector which, when the driver is sitting down, appears almost completely to obstruct his forward view, and this, despite the recognised need for a clear look-out.

On the tender a clear look-out could have been obtained effectively by omitting to carry the side sheets to the full height of the tender. This might have detracted from the look of the locomotive, but after the recent Southern Railway austerity locomotive one is inclined to doubt whether looks really matter.

Yours faithfully,

R. HOWARD

Liverpool Street Station

London & North Eastern Railway,
H.Q. 1 (via Hitchin). March 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Recently I required some up-to-date illustrations of our Liverpool Street Station, and when looking through the enclosed photographs that I have just had taken, I recalled that in December last our somewhat venerable terminus was subjected to a small barrage of cheap gibes from Mr. Tom Driberg, M.P. in an article in *Reynolds News* he asked "is there any London terminus so almost completely squalid, so tiringly chaotic" and (as one might expect from him) "so true a type of the industrial capitalism which produced it"? He concluded his diatribe by describing the place as a "hell-hole."

Now even though Mr. Driberg does, I believe, use Liverpool Street Station quite frequently, I suppose one could hardly expect him to spoil the sensationalism of his journalistic efforts by giving the L.N.E.R. any credit at all for the numerous improvements such as the new waiting rooms, snack bar, kiosks and barriers, better lighting and modernised and regrouped sign and advertising sites that were provided shortly before the outbreak of war. Nor for the same reason, presumably, can he be expected to make any allowances for the architectural untidiness inseparable from A.R.P. measures and patched-up bomb damage, or for the immensity of the task of keeping a great station clean and tidy with a staff reduced and overworked because of wartime needs. And I thought journalists were trained to be observant! No matter, the L.N.E.R. has a pretty broad back!

Mr. Driberg's outburst, however, found its way into your "Scrap Heap" (12/1/45). Now that is a very appropriate place for it, but its appearance at all in your pages, *without comment*, might lead overseas railway officers to suppose that there *was* a good deal in what he had to say, especially as but a fortnight later, in an editorial "That Cheltenham Race Train," expressly written for the information of those same officers, you praiseworthily condemned "ill-informed and often ridiculous statements concerning railways that appear from time to time in the daily press."

May I leave your overseas readers to judge from these photographs whether Liverpool Street Station merits the appellation "hell-hole"?

Yours faithfully,

GEORGE DOW
Press Relations Officer

[The photographs sent us are reproduced on pages 572-3. Concerning our commenting in one case and not in another, a Ministerial statement in Parliament in our view merited comment. The "hell-hole" paragraph reprinted in "The Scrap Heap" which has so pained Mr. Dow we thought just amusing.—Ed. *R.G.*]

Revolving of Locomotive Boilers During Repairs

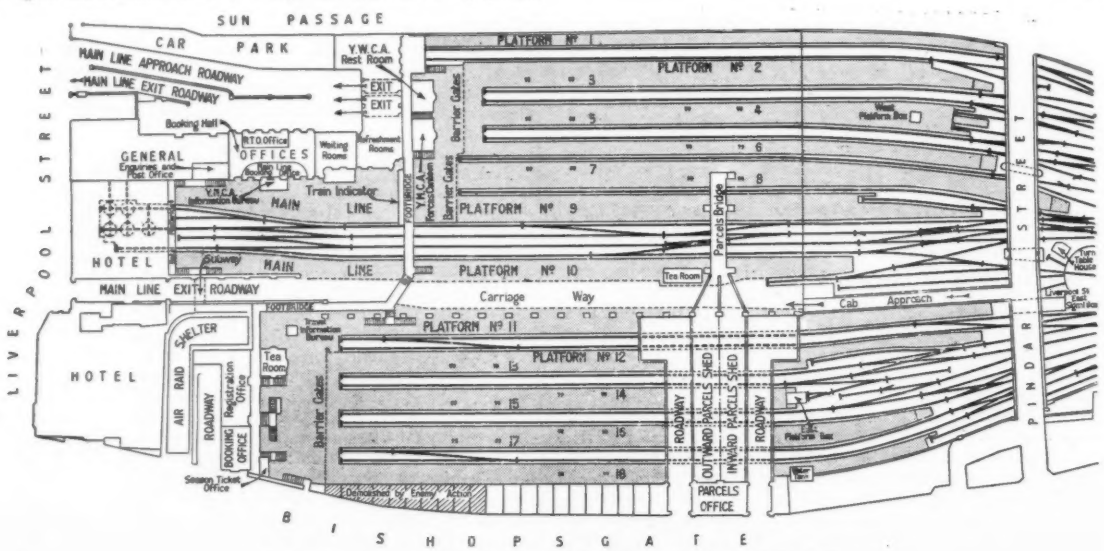
London, S.W.1. June 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. A. L. Jones is certainly to be congratulated on his effective solution by the use of slings for revolving locomotive boilers under repair to what formerly has been regarded as a tiresome and difficult operation. He is even more to be praised for the helpful way in which he has made this method of turning boilers known, through his letter in your June 1 issue, to locomotive engineers generally. Although it is possibly in use in other locomotive workshops, perhaps amongst private builders, I have not seen the method used in a British works. There are, indeed, not very many locomotive boiler shops in Great Britain where such a method would be feasible. In many cases the boiler shop crane, although of ample capacity, possesses only one crab, which rules out any consideration of Mr. Jones's proposal. There is also a tendency in several workshops which are built specifically for boiler work (as opposed to erecting and repair shops) in which the layout pre-supposes the arrangement of the boilers with their longitudinal centre lines roughly parallel to the travelling crane, instead of in the direction shown in Mr. Jones's photographs. At Crewe the L.M.S.R. makes effective use of a single sling for lowering a boiler on to the frames during erection, as compared with the practice of using two cranes per boiler at certain other works.

Yours faithfully,

W. S.



General arrangement of Liverpool Street Station, L.N.E.R.

Publications Received

Principles of Prosperity. By Francis W. Hirst. London: Hollis & Carter, Limited, 25, Ashley Place, S.W.1. 7¼ in. × 5 in. 188 pp. Price 8s. 6d.—A lucid and reasoned exposition of the difficult subject of political economy is given in this work by a recognised expert, who for many years was Editor of *The Economist*. Though the book was published at a time when the end of hostilities was not immediately in sight a study of it should be of special value now as a guide in dealing with post-war conditions and should be a cure for much muddled thinking. The author maintains that "political economy, which is a branch of politics, is subject to certain laws and rules from which there is no escape; they apply universally; when they are violated by administration or legislation there is bound to be trouble." The fifteen chapters include those on such vital matters as "Capital and Labour," "The Law of Supply and Demand," "Money," and "Banks," and "Fallacies and Maxims." The author is a strong believer in the necessity for hard work and individual effort and has no use for the theory that the public purse is bottomless. He quotes a statement from a prominent politician who made light of our loss of foreign investments: "We shall have to buy goods for goods and people living on interest will be entirely gone. That means we shall have to be a nation at work." The author certainly hopes that we shall be a nation at work but points out that the loss of the capital invested overseas will make it more difficult to employ labour at home, and there will be millions drawing interest on war loans and Post Office savings which represent at least ten times the value of all other Stock Exchange securities, and this interest will have to be found by British taxpayers.

Supplemental Track Tests of Twelve Locomotives. Published by the Office of the Mechanical Engineer—Mechanical Division, and the Research Engineer—Engineering Division. Association of American Railroads. 9 in. × 6 in. 131 pp. Illustrated. No price stated.—On p. 180 of our issue of February 23, 1945, we reviewed the important publication *Counterbalance Tests of Locomotives for High-Speed Service*, which this Association had published at the close of 1944. The present volume is, in effect, a sequel to that research. It is produced in much the same style, the text being reproduced in reduced-size typescript, and illustrated by small but informative line diagrams and graphs; the result is a handy and eminently readable report.

The further experimental work of the Counterbalance Committee was begun in 1942, when track tests of twelve locomotives were made on the Chicago & North Western Railroad at Harvard, Illinois. The Committee had originally hoped to obtain a 4-8-4 locomotive, with which to complete the original test programme; due to shortage of power, however, such an engine could not be spared from service for the four or five weeks required for the tests. Since the track apparatus and strain-measuring equipment were already installed in the test track, it was decided to conduct supplemental tests with several locomotives (averaging two days' testing time apiece) to determine the vertical and lateral forces on the track. It was held that by testing two or more locomotives of the same class of power, but with different arrangements of counterbalancing, a further study could be made of the effects of counterbalancing on the track structure. These tests were carried out on four 4-8-4s, two 2-8-4s, three 2-8-2s, and three 2-10-2s.

The loads hauled by the twelve locomotives consisted of five cars weighing 374 tons. In these supplemental tests 348 test runs were made, with an aggregate road mileage of 2,824.

The tests on the 4-8-4s are reported first. In these runs, the unbalance in the driving wheels set up vertical forces which, in view of the mass and speed of operation of these engines, was not thought to be excessive. More noticeable, however, was the effect of the vertical component of the main rod thrust—particularly in the high-speed runs where the major part of this thrust is contributed by the inertia of the reciprocating weight. However, the lateral forces exerted on the track were found to be moderate; even the maximum figure in this series was lower than those recorded for Committee Test engines. In the case of one locomotive the overbalance was found to be larger than was desirable for the track. A proposed arrangement for rebalancing, in this case, is offered, but has certain limitations, for with it the capacity of both the locomotive and the track are reached. In general, the riding qualities of these engines were very good.

Those responsible for these tests appear to have had a pretty rough time with the two 2-8-4s, which figure next in the report. As received, these engines had too much reciprocating weight unbalanced in relation to the weight of the locomotive. The original counterbalancing system was hard on the track, as it set up unfavourable vertical forces, while the reciprocating unbalance (11·56 lb. per ton of locomotive weight in working order) was too high, and allowed intolerable disturbing forces to develop. Severe vertical vibrations were experienced at the rear end of the engine, evidently derived from the large fore-and-aft surging forces. Rebalancing of these locomotives almost halved the fore-and-aft force, reducing it from 199,000 lb. to 106,000 lb.; and instead of being the worst-riding of the 63-in. driving wheel engines tested, they became the best, after this modification.

The 2-8-2s were found to be greatly underbalanced, as originally designed; indeed the application of *any* of three methods of rebalancing was found to benefit the track. Unexpectedly high rail stresses were recorded, due to the large amplitude of the stress values arising from the vertical component of the main rod thrust. These engines were provided with a centring device for the trailing springs which, in operation, was found to reduce lateral oscillations at the rear end as well as the lateral forces on straight track. However, as the lateral forces from the trailer on one locomotive seemed to be unrelated to lateral track restraint, it was thought that the initial lateral restraint of the trailing truck with the centring spring connected was too small to give the desired lateral stability.

Finally, in the tests on the 2-10-2s, excessive underbalance in the main driving wheels imposed high vertical forces on the track, even at 50 m.p.h. However, rebalancing was carried out, and this reduced the rail stresses to the capacity of the track. It is interesting to note that no notable benefit was conferred, in regard to lateral forces on the track, by this rebalancing. One of these engines, however, was not in good mechanical condition.

The general findings of the Committee, after conducting these track tests were:—

(1) Locomotives should be counterbalanced so as to keep the vertical forces within the capacity of the track, to avoid overstressing the rail.

(2) Counterbalancing should not allow disturbing forces on the engine to reach such a magnitude as to be detrimental to its operation and maintenance.

(3) The lateral forces on the track are largely influenced by the trailing truck, and may be kept to a reasonable maximum by correct design.

(4) The findings resulting from the earlier series of counterbalancing tests by the same Committee are confirmed, although the optimum counterbalancing arrangement will fall well below the limits prescribed in that report.

The Elements of Workshop Training. A Textbook for Works Apprentices. By Edgar J. Larkin. London: Sir Isaac Pitman & Sons Ltd., Parker Street, Kingsway, W.C.2. 7½ in. × 5 in. 255 pp. Fully illustrated. Price 12s. 6d.

It is not possible always for engineering works to institute special schools for technical training. In these circumstances, Mr. Larkin's book should prove valuable to apprentices and pupils, especially in the early stages of their training. The book is not intended to be a substitute for practical training in the workshop or attendance at technical classes: the contents are essentially supplementary to both practical work and theoretical instruction. The book comprises two sections: the first deals with science as applied to workshop practice and includes mathematics, mechanics, elementary heat, metallurgy, hydraulics, electricity and chemistry. The second part of the book covers machine drawing, testing of materials, measuring instruments and gauging, pattern-making, foundry and smithy work, machine tools and general engineering practice.

A Yearbook of Railroad Information. Published by the Eastern Railroad Presidents Conference, Committee on Public Relations, 143, Liberty Street, New York 6, N.Y. 6 in. × 4 in. 96 pp. No price stated.

The Yearbook of Railroad Iuformation (1944 edition) will be welcomed by all who are interested in railway operation in the United States. The figures for U.S. war traffic from December, 1941, to December, 1944, disclose that 28,000,000 troops and 225,000,000 tons of war freight were carried on the railways during that period. In the first eight months of 1944, as compared with 1943, United States passenger-mileage rose from 56,580,741,325 to 64,341,522,129. Further statistics show that the United States has some 228,000 miles of track, excluding sidings and parallel tracks. The number of locomotives in service is given as 42,731, with 37,940 passenger coaches and 1,756,343 freight wagons.

Intercambio.—A monthly publication devoted to the interchange of commercial and cultural information between Mexico and Great Britain, published by the British Chamber of Commerce, Mexico City; subscription 15s. a year. London: 18, Fleet Street, E.C.4. This publication has just completed its first year and offers an excellent field for making known the products of British manufacturers in Mexico. The issue for December, 1944, shows how well the Editor, Señor Miguel de Uranga, has achieved the object for which the journal was started. It contains articles dealing with selected British industries, with current political and economic questions, and an instalment of a well-arranged course on basic English, which should do much to assist the spread of a knowledge of our language among business circles in Mexico. There is a rendering of the Atlantic Charter in basic English and a Spanish translation.

XUM

The Scrap Heap

The gossip of the barrack square is the least reliable source of information I have come across since I embarked on a journalistic career.

B. K. C.

* * *

According to the Idler in the *Natal Mercury*, quoted in the *South African Railways & Harbours Magazine*, there is a man in Johannesburg, 38 years old, who has never set foot in a train. This man has an uncle, by marriage, who never even saw a train until he was 60 years of age—he was born and bred in the Channel Islands.

* * *

London to Perth under L.M.S.R. Express

A sixteen and a half year old boy travelled for more than 13 hours under a carriage on the train from Euston to Perth, a distance of 460 miles.

At Perth on May 29 he was charged with defrauding the L.M.S.R. of £3 8s. 11d., the fare from London to Perth.

Mr. A. Whitehead, prosecuting, said the boy boarded the train in London about 7.30 p.m. on Sunday, and the next morning, when the carriages were being inspected at Perth, he was found crouching on a cell box in a very dangerous position.

* * *

What's in a Name

Following correspondence on the subject of named trains in the *Southern Railway Magazine*, Mr. W. C. E. Tompkins of Bournemouth writes to the Editor of that journal confirming that no L. & S.W.R. train was officially named. Unofficial names, however, often found their way into common use. The train known to the staff as "The Alexandra" was so named, states Mr. Tompkins, after the Pullman car *Alexandra* in the middle of a train running between Waterloo and Exeter, put on about 1883. Several trains in the 1880s were similarly named; one, an early morning mixed train, Basing to Andover Junction, was named after the engine driver "Schofield." Another train was always referred to as the "Mary Tavy," its L. & S.W.R. destination. Some sections of the L. & S.W.R. line also had unofficial names: the Andover-Redbridge was known as the "Sprat and Winkle" line; the Hurstbourne-Fullerton branch, opened on June 1, 1885, was the "Lark and Cuckoo" line, so named by the first stationmaster at Hurstbourne.

* * *

Probably few who saw the obituary notice of Mrs. Selina Hannah Hewson, who died on May 18 in her 104th year, realised that she was a survivor of a great railway family. She was the daughter of Peter William Barlow, one time Engineer of the South Eastern Railway, the constructor of the old Lambeth suspension bridge, and also of the world's first tube railway (the Tower Subway). Mrs. Hewson rode in the first train from Tunbridge Wells to London on September 20, 1845, and thus lived into the centenary year of that event; she also rode on the first train of the City & South London Railway. Her uncle was W. H. Barlow, who designed the roof of St. Pancras Station in 1866. Her grandfather was Peter Barlow, Professor of Mathematics at the Royal Military Academy, Woolwich, and the compiler of *Barlow's Tables*.

* * *

Recently I have been having trouble with laundries shrinking my unmentionables, so I found a large railroad spike and tied a tag to it with the inscription "Try and shrink this!" When my laundry was returned, I opened it and found a small carpet tack with a tag tied to it, inscribed "We did!"—*C. G. Babcock in "The Reader's Digest."*

* * *

Black Market Tickets

An official inquiry is being made in Colombo into allegations that tickets from Ceylon to stations in South India are being sold in the black market within station premises. The inquiry is the outcome of an incident at a railway station in Colombo when passengers are said to have asked for tickets to a station in South India. It is said to have been stated that tickets to that station were not available. Later, however, a man approached the intending travellers and offered to obtain the required tickets on condition that an extra payment of Rs.25 was made on each ticket.

* * *

"Effete Old England"

A letter to the Editor of the *Railway Age* commented on the recent activities of certain American railways in seeking the help of distinguished anthropologists to ensure that future railway coach seats will "fit" the passengers, "including critical Bostonians." The letter proceeded: "May a mere traveller ask this question? Of what use will a seat be which offers the acme of comfort if the occupant is all but projected into space by violent jolts which occur much too frequently each time the train attempts to start, and, sometimes, even to stop? Frankly, if 'effete' old England can provide smooth starting and stopping trains for all passengers all the time, surely we of the New World can do as much! Let us put first things first and provide trains for all passengers all the time which can start and accelerate to maximum speed, or slow down uniformly to a stop, with that perfect smoothness, noiselessness and ease characteristic of the Milwaukee Road's 'Hiawatha' and probably only a dozen other trains in the United States; trains that, in those respects, equal anything Europe had before the war." The letter was signed "International Traveller."

* * *

Tailpiece

From the Dogger el Bank

(*Shortage of dock labour has contributed to the necessity for fish queues*)

Don't blame rail transport when you wish
That you could have a plate of fish,
For rails are doing all they can
To get some fish to everyman.

It's not their fault wives stand in queues,
Nor can the railways take abuse;
The trouble is that men are short
At docks and every fishing port.

To solve the problem, "Loo ell in"
Is making efforts (and he'll win),
To get "key" men back with all speed
When from war's service they are freed.

And then there'll be a spate of fish
To make all men a dainty dish;
Such food is good for active brains
Which help to run the fast fish trains.

100 YEARS AGO

From The Railway Times, *June 7, 1845*

DIRECT INDEPENDENT LONDON AND MANCHESTER RAILWAY.—(Remington's line.)—Provisionally registered pursuant to 7 and 8 Vict., c. 110. CAPITAL £3,000,000, in 60,000 shares of £50 each. DEPOSIT £2 15s. per share.

This important national undertaking was brought forward in the autumn of last year, and arrested from want of sufficient time to comply with the Standing Orders of the House, the then Provisional Committee having determined that they were not justified in wasting the money of the subscribers in carrying on a contest, which must necessarily be prolonged into another session. The branch then contemplated to York has been abandoned, and the railway has been re-registered as the Direct Independent London and Manchester Line.

This railway has not been pillaged from the prospectuses of any other undertaking. The country was originally surveyed in 1841 by Mr. George Remington, and the sections taken between London and Leicester, and the remaining distance between Leicester and Manchester viewed with regard to the final Parliamentary survey when brought out last year. This railway received the support of a most numerous and influential body of noblemen, gentlemen, and merchants, in London, Manchester, and along the line, most of whom have signified their intention to support it on its re-production. It will be an integral line from terminus to terminus, not depending upon the caprices or contingencies of other lines, making, made, or to be made. The Atmospheric mode of traction will be used, and the broad gauge. This will ensure the highest speed, economy of construction and working.

It will commence at King's cross, at the north end of Gray's-inn-road, thence round Muswell-hill to Friern Barnett, Chipping Barnett, St. Albans, Luton, Silso, Ampthill, Bedford, Wellingborough, Kettering, Market Harborough, and Leicester, thence across the Swannington and Leicester Railway to Burton-upon-Trent, Derby, Ashbourne, Uttoxeter, Tean, Cheadle, Leek, Macclesfield, Stockport, and Manchester.

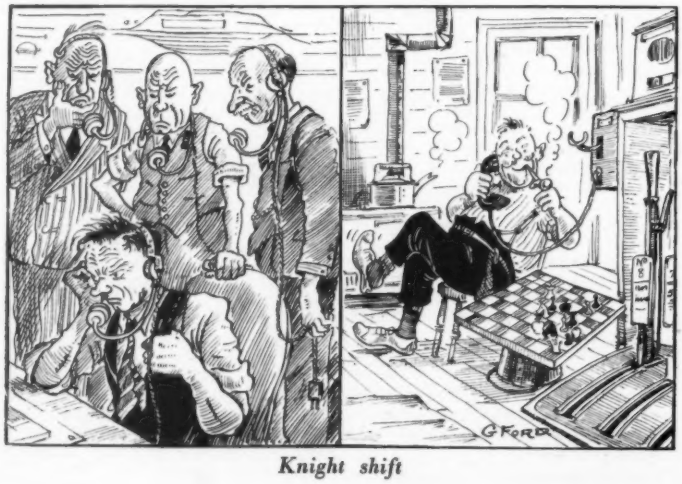
The population and commercial intercourse within a given distance of the line, on either side, is greater than that of any other route to the north, as it nearly follows the old line to Manchester. The length of the railway between the termini will be about 177¼ miles.

As one line of rail will be sufficient for the larger portion of its course, a great saving of labour and materials will be obtained. There will be no tunnelling or extraordinary earthworks on the railway, as such are not necessary on a line worked on the Atmospheric principle.

The journey between the termini will be performed in three hours and a half.

A more detailed prospectus, with the Provisional Committee, will be published in the course of a few days.

Applications for shares, prospectuses, &c., to be made to the solicitors, Sir George Stephen, and B. W. Hutchinson, Esq., at the Offices of the Company, 29, Moorgate-street; J. Owens, Esq., 54, Moorgate-street; and W. Rogers, Esq., Solicitor, Bedford.



Knight shift

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

Buffet-Lounge-Double-Bedroom Cars

The provision of additional breakfast accommodation on busy overnight runs between Montreal and Toronto is among improvements to be offered by the Canadian Pacific Railway on Trains 21 and 22 in two buffet-lounge double-bedroom cars. The vehicles have been converted by the company from " River " class lounge cars. Each has a compartment, lounge room, solarium and four bedrooms; dining facilities are provided by four triangular tables for two, with half-circle leather settees instead of chairs, at one end of the lounge room. In the compartment a movable armchair has been placed instead of the old-style compartment seat; and a cross-wise sofa bed replaces the former lower-berth bed running lengthwise. The kitchen has all-metal cabinet surfaces.

WESTERN AUSTRALIA

Publicity Committee

The Commissioner of Railways, Mr. J. A. Ellis, has arranged the formation of a Publicity Committee, consisting of selected officers, to bring the railways more under public notice and direct some attention to the difficulties under which the Railways Department is operating on account of war; to answer criticism in the press, and to make reference to matters of general interest in the department, such as construction of rolling stock, buildings and bridges, and any other features which it is considered desirable to communicate to the public.

The Chairman of the committee is Mr. J. F. Tomlinson, Secretary for Railways & Assistant to the Commissioner, and the members include Messrs. R. M. Evans, Chief Traffic Manager, L. T. Hickey, Comptroller of Stores, P. C. Raynor, Deputy Assistant Secretary for Railways, and officers of the Secretary's and Traffic Branches. The committee meets periodically to discuss matters of general policy.

Public Appreciation Sought

The Commissioner has addressed a circular letter, personally signed, to all station officers, traffic inspectors, goods clerks and others whose duties bring them in contact with the general public, setting out the objects of the publicity campaign and seeking the co-operation of the staff concerned in making it a success.

Distributing agencies for publicity will include the local press, wireless, printed matter and personal contact. Newspaper articles are to be written, generally speaking, in the style of news paragraphs rather than as official statements; a number of these has appeared already. In some cases explanations have been given for disorganisation of service on account of engine failures and so forth; others have been on such matters as the Swan View Tunnel deviation and water haulage.

It is hoped that, as a result of the publicity campaign, railway users will be more clearly aware of the railways' position, so that in the post-war years there will be a better appreciation in the public mind generally of the services which the railways have performed during the years of war, and the difficulties they have encountered in maintaining a regular transport service.

Drought and the Railways

Commenting on the haulage and supply of water by the railways, on account of drought conditions, the Commissioner of Railways states that the Railway Department is using a fleet of 300 water wagons throughout the State; but that with the increased demand these are insufficient and that steel open wagons are being converted at the railway workshops for water cartage. Alterations to these wagons consist of a considerable amount of welding and other iron work. Fifty 14-ton 5,000-gallon petrol rail tankers also have been placed in water traffic.

Drought conditions in various sections of the State during the past year have created the present abnormal water-haulage position. The areas concerned are catered for normally by dam supplies, which usually are replenished during the winter months. The rains in the past winter were in many cases extremely light, so that dams which normally would have filled were much below capacity; and the early exhaustion of these necessitated heavy drawing on others in the vicinity, which in turn were emptied, so that haulage from further afield has become necessary The bulk of this traffic is for military purposes, for which over 1,000,000 gallons a week are being hauled. In many cases distances of over 100 miles are involved. In addition, water, in the vicinity of 100,000 gallons a week, is being hauled for stock and domestic purposes.

The haulage of water naturally involves the diversion of manpower, engines and rolling stock from other important services; and the maintenance of the water service is only one of those difficulties which the Railway Department is called on to overcome while satisfying the general transport needs of the State.

NIGERIA

Colour of Locomotives

Passenger locomotives are to have a new livery. Instead of the present Midland red, they will appear in a shade of green resembling that of the old London & South Western.

Additional Passenger Train

A new weekly through train named the " Plateau Limited " with first, second and third class accommodation, has been introduced between Lagos (Iddo) and Jos, a distance of 735 miles. This is in addition to the thrice weekly service provided by the Western Limited Trains (changing at Kaduna Junction).

Relaying of Track

The existing track originally was laid in 1909-11 with B.S. 45 lb. flat-bottom rails on steel-lug sleepers; it has now reached the end of its service life, and is an ever-present anxiety to the engineering staff responsible for its maintenance. Rail fracture and rail crippling frequently occur, and fractured and broken fishplates average about 30 per month. Rail creep is excessive throughout the section, and is primarily due to the opening and splitting of the lugs of sleepers, which with the tapered-steel key in use, makes it impossible to secure adequate rail fastening. Additional gangs are constantly employed throughout the section pulling back creep.

The new track is to be of B.S. 60-lb. R.F.B. rail laid direct on 6 ft. 6 in. × 10 in. × 5 in. hardwood timber sleepers obtained from the Nigerian forests. Approximately 20 different species of timber sleepers are in use and weigh from 35 lb. to 68 lb. per cu. ft. air dried. Rails are secured by $\frac{5}{8}$ in. elastic rail spikes, Type T3.

The use of timber sleepers is a new departure from normal practice in Nigeria and is necessary because of the difficulty in obtaining steel and the necessary shipping space. Timbers are treated by the open cell process (on bethel process) for which the most modern timber sleepers impregnating plant has been obtained. The plant includes special machinery for adzing and boring. Sleepers are adzed for a rail tilt of 1 in 20. The work is estimated to cost £856,500; and 815,000 cu. ft. of timber, 17,000 tons of permanent way material and 70,000 cu. yd. of stone ballast will be used. The work is being carried out direct by the Chief Engineer's regular staff. The existing formation is being used and it is necessary for normal traffic to be passed. Apart from through passenger trains, all other trains have to be regulated, and run mainly at night for the particular section being relayed.

Railway Revenue

Railway revenue for the year 1944-45 (Nigerian financial year is from April 1 to March 31), although below that of 1943-44, is better than was estimated. To week ended March 17, receipts totalled £3,793,954. This was due largely to the groundnut crop, which exceeded earlier expectations and is likely to total some 220,000 tons; the whole of this crop has to be transported by rail some 700 miles to Lagos for shipment and, being seasonal traffic, entails appreciable one-direction empty haulage.

American Built Locomotives

From 1942 onwards the Nigerian Railway was called on to cope with greatly increased traffic. The strain on locomotive capacity was aggravated by lack of spares, but in 1943 the position was eased considerably by the arrival of twenty " austerity " locomotives built by the American Locomotive Company. These 2-8-2 engines, with a tractive effort of 20,128 lb., have given excellent service on mixed-traffic work. A number of them have completed 75,000 miles before requiring shop repairs.

PORTUGAL

Train Service Reduction

The serious situation in Portugal caused by the difficulties experienced in importing coal, recently compelled the authorities to order a drastic reduction in train services. This was to last for about two months, in the expectation that at the end of that period the position would have materially improved. In the ordinary way, Portugal imports about 15,000 tons of English coal a month, which arrives in British vessels, but since the commencement of the present year not more than 9,000 tons had been received from that source to about the middle of March. There is considerable delay in getting supplies of American coal over in Portuguese vessels, when such are free to be allocated to the service, and heavy claims on the coal when it does arrive.

Such minimum reserves as it is thought prudent to hold were threatened with total exhaustion if the ordinary demands were maintained and the principal railway system in the country seemed likely to be left without fuel in about a month's time. Wood fuel has been in short supply, for various reasons. It would have been possible to ease the position by resorting to oil fuel, but it takes time to equip locomotives to burn it. Some twenty locomotives arranged for oil-burning are, however, on order in America. A temporary cut in the services, therefore, became absolutely necessary and the public has been requested to accept it cheerfully.

Power-Operated Doors for Railway Rolling Stock

*A survey of twenty-five years' developments**

THE London Electric Railway put into service in 1920 forty new trailer cars, fitted with pneumatically-operated doors at the middle and at each end; and converted, to run with these cars, twenty motor-cars fitted with double-centre doorways and an end vestibule doorway for the guard. Two guards were employed, each controlling half the train doors from the appropriate motor-car. The success of this arrangement was apparent and, after some abortive attempts to convert existing stock to this new pattern, a policy of building all new Tube stock with air-operated doors, and replacing all existing stock in a similar way, was adopted in 1923.

Power-operated doors for passenger vehicles originated in America many years before their introduction into this country. Air is generally the motive power—an obvious choice, as compressors usually have to be installed on the train for the braking system. The London Transport air engine is similar in action to the American type, but opportunity was taken of simplifying the design, to reduce the amount of control apparatus required. A differential type of engine was designed, which had one piston twice the area of the other. With this arrangement, constant air pressure is applied to the small cylinder, and the operation of the door simply consists of exhausting or admitting air to this large cylinder; consequently only one electro-pneumatic valve is required to control all the doors on the same side of the car. Air pressure of about 30 lb. per sq. in. is used, and the engine opens or closes the doors in about 2½ seconds with a single door opening of 2 ft. 3 in., that is, 4 ft. 6 in. for double doors.

A competitor to the compressed-air engine in America, though not so widely used, is the electric door-opener. An electric motor is geared down to operate a rotating arm at about the same speed as the air engine. It has not as yet found favour in this country, due possibly to the motor having to be operated on 600-volt traction circuits, which is not attractive for small motors. Generally, motor and gearing take up more space than a compressed air engine—an important consideration when the apparatus has to be housed behind the longitudinal seat backs.

The air engines usually are parallel with the car side and housed either under the seats or behind the seat backs. One interesting design enabled the engine to be housed under a cross-seat. The engine arm, therefore, was placed at the end of the engine, at right-angles to the centre line of the cylinder.

The engine for the earlier Tube cars was designed to give cycloidal movement to the engine arm roller, which reduced the length of the engine arm and was an advantage when the engine had to be housed at the back of the seat with restricted space under the window sill. This engine had the small cylinder arranged to slide into the large cylinder on a fixed piston rod, which, being hollow, carried the air supply to the small cylinder. The geared sector was attached to the small cylinder by a crosshead shaft which also carried the engine arm. The rack was stationary and attached to the bed plate. It will therefore be seen that as the small cylinder moved it carried the centre of the arm backwards or forwards at the same time as the arm rotated.

With engines fitted with arms to revolve 180 deg., some mechanical cushioning is given to the door, as its speed is reduced at the end of the stroke. With doors up to 2 ft. 3 in. wide, giving 4 ft. 6 in. opening with double doors, "cushioning washers" with about $\frac{1}{32}$ in. diameter hole inserted in the feed pipe union, are all that is required to prevent slamming. If the width of the door is increased much beyond 2 ft. 3 in., pneumatic cushioning is necessary.

Doors are of the sliding type, either top-hung with a bottom guide or top-guided with bottom grooved rollers. The top-hung type is used when the door is straight or only slightly curved. On the Tube type of car the doors have guides at the top, and supporting rollers at the bottom. This arrangement is necessary as the top of the door is curved to form part of the car roof. Greatest wear occurs when the doors are closed and not during opening and closing. This is due to the slight vibration of the door which goes on all the time the car is travelling, causing the rollers at the point of contact with the track to wear and form indentations in the track which become worse as the clearance gets greater with wear. This unwanted clearance cannot be taken up by the adjustment provided, as this would cause the rollers to bind when on the unworn part of the track. One cure for the trouble is to fit local hard steel dowels immediately under the rollers in the closed position. Another would be to fit the rollers, if space permitted, with non-metallic tyres, which being softer would take the wear instead of the track and could be easily renewed.

With the Tube type of car door it is necessary to have the rollers at the bottom, which run on a track let into the threshold plate. The track has a groove on either side to give clearance to the flanges of the rollers.

Two difficulties arise with this type of suspension: the door can be forced off the track by a robust passenger who is determined to get out when the doors are closing; and foreign matter can get into the slots on either side, causing jamming of the door. A scheme which is being tried experimentally will, it is hoped, eliminate these troubles. It comprises a flush solid track with plain rollers, the guiding of the door being carried out at the top, as at present, and at the bottom with side horizontal rollers bearing on the outside and inside of the door. These rollers are located just inside the door pocket, and the other pair on the tail-piece of the door. There is no track, so the door cannot be forced off it, nor is there any opening in which obstructions can lodge.

A "sensitive edge" of rubber runs down the front of all London Transport power-operated doors, to prevent injury to passengers caught in the doors when closing. In America some years ago there was developed an "electric door edge," designed to reverse the direction of the door if a passenger was caught. The front edge of the door took the form of a spiral spring which ran the full length of the door, and down the centre of the spring a wire was stretched, the whole assembly being enclosed in a canvas cover. When pressure was applied to the door edge, the spiral spring made contact with the wire which completed the circuit of an electric reversing valve causing the door to open again.

This method was considered for the earlier Underground air-door cars, but was abandoned because of the difficulty of arranging this type of edge on a curved door and the fact that the door-operating voltage was 600 as against the low voltage used on the American scheme. Six hundred volts was considered too high to bring so close to the passengers.

For multi-unit stock the best form of door control is undoubtedly electro-pneumatic, as this gives instantaneous operation throughout the train irrespective of its length. The usual arrangement is to control the air engine by means of electro-pneumatic valves, the coils of which are connected to train line wires and are fed from the guard's position.

Another system which has found favour in recent years and has certain advantages over the previous arrangement has set-and-trip valves. The doors are closed by a momentary current passed down the train line wires, thereby keeping current consumption to a minimum, which is a consideration when it is supplied from low-voltage batteries.

With power-operated doors the signal circuit is important as it shows the guard that all doors are properly closed and ensures that the starting signal to the driver cannot be given until all the doors are closed. The indication for the guard usually takes the form of a signal lamp in the guard's compartment which burns continuously all the time the doors are in the closed position, while the starting signal to the driver is a single-stroke electric bell located in the driver's cab and operated by a push-button from the guard's control box. Interlock switches are fitted to all passenger doors arranged to make contact when the door is closed as nearly as practicable. The signal circuit is a loop circuit starting from the guard's position and passing through all the door interlock switches in series, thence through the coil of the single-stroke bell and back to the guard's position *via* the signal lamp. The short-circuiting of the signal lamp by the signal button reduces the resistance of the circuit, which then passes sufficient current to ring the bell. On 600-volt circuit this is achieved direct by using a high-resistance (*e.g.*, neon) lamp for the guard's signal, but on low-voltage circuits a relay is needed, whose contacts, when closed, bring in a local supply of current to light the signal lamp.

If a driver stops short of or slightly over-runs the platform, means have to be provided by which the driver or guard can isolate and prevent the leading or trailing doors, which would be off the platform, from opening. This is carried out by fitting separate door valves for these end doors, the feed to which can be interrupted easily by a switch in the driver's cab or guard's compartment.

Guards on the London Transport trains are at the leading end of the rear car. Originally the guards' doors were hinged, which meant that at non-operating positions these doors had to be locked and could not be used by passengers. On later stock, sliding doors were provided at these positions operated by a separate valve which could be used independently by the guard or changed over to operate with the remaining passenger doors when the position was not occupied by the guard.

* Abstract of a paper by Mr. A. F. Collins presented to the Institution of Locomotive Engineers on February 23, 1945

Two-door control boxes are provided at each guard's position, one on either side, each box containing the various push-buttons for controlling the doors on that side of the train. In one of the boxes a key-operated position switch is provided, so arranged that the switch has to be in the " off " position before the key can be removed. The position switch is a multi-contact switch which feeds the push-buttons of both control boxes and automatically makes the change over for the guard's local door and livens up the door cut-out switches and signal circuit. When the position switch is in the " off " position all push-buttons and switches in the door control boxes are dead.

With the purchase, in 1938, of the stock for the Board's extensions of the open sections of the lines, it was thought desirable to enable passengers to control the opening of the doors on outside sections, particularly in wintry conditions, and thus avoid any doors being opened unnecessarily. Fifty-volt dual door control was therefore fitted to give normal opening by the guard, and individual passenger control by push-buttons on either side of the doorways, under the control of the guard. For this scheme separate electro-pneumatic valves are needed for each doorway; these valves have double-wound coils for the door-opening valve, one winding being connected to the normal open control line and the other connected to the passenger control line, the circuit being completed through the passenger push-buttons. This scheme was in operation only a short time and had to be discontinued due to wartime black-out.

The use of passenger-controlled doors was also adopted for the stock built by the L.M.S.R. for the Wirral and Liverpool—Southport lines.

One big problem in door control is to ensure that any defect of equipment or wiring will not cause the doors to open inadvertently. The same defect, say, on a traction circuit—which at the worst would prevent that equipment from operating—may on a door circuit cause the electro-pneumatic valve to open the doors between stations. The door circuit must have a separate return and the temptation to save train lines and use a common return for other equipment as well must be avoided. Further, it is necessary to isolate the door control lines when the doors are closed and bond them together, the bond thereby short-circuiting the valve coils and preventing the coils passing any stray current which may, due to defects in wiring, get on to the door control lines. The removing of the bond when the doors are to be opened is carried out automatically either by the door relay or by back contacts on the " open " push-buttons. In either case these contacts must be of low resistance and make good contact, otherwise the bonding becomes ineffective.

The apparatus described may seem to some to be unduly complicated, but the complication is necessary either because of safety reasons or operating requirements. Necessary complication by itself is not objectionable if the apparatus is reliable and does not require an undue amount of maintenance. Reliability is best judged by the extremely low number of service failures causing delays, compared with the number of equipments in service and frequency of operation. See following table:—

Item	Total No. in service	Annual operations	No. of failures (1943)	Failures per 1,000,000 operations
(1) Door engines	21,820	1,877,000,000	68	0·036
(2) Electro-pneumatic valves	23,726	2,040,000,000	154	0·075
(3) Door-control boxes...	2,464 (car side)	212,000,000	122	0·575
(4) Interlocks	21,820	1,877,000,000	173	0·092
(5) Signal equipment	2,464	212,000,000	82	0·386

With regard to maintenance, the apparatus is given the usual inspection and cleaning every four weeks and is completely overhauled with the car once every 200,000 miles, approximately four years, with the exception of the air engines which are allowed to run in service for two overhaul periods, that is, eight years, without being dismantled.

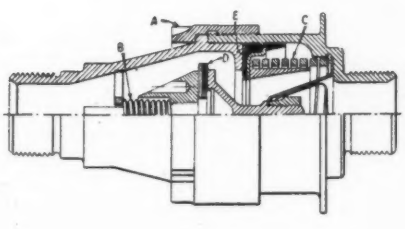
Self-Sealing Pipe Couplings

Pipeline joints can be broken and remade without loss of pipe contents

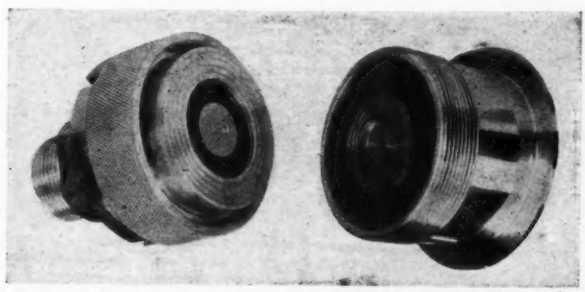
A NEW type of self-sealing coupling, suitable for pressures up to 200 lb. per sq. in., has been designed by the Exactor Control Co. Ltd., of 14, Berkeley Street, London, W.1. The coupling, which can be fitted in a pipeline in the same way as an ordinary coupling, enables sections of the line to be disconnected without loss of the pipe contents. Cocks are not required and the pipeline need not be drained before disconnection. The self-sealing property of the coupling renders it of special value for the handling of corrosive or inflammable liquids. Another application of the fitting is in pipelines used for syphoning.

The action of the coupling will be noted from the illustration. As the outer ring A is unscrewed, the springs B and C extend and press the halves of the coupling body apart. Thus the flow-path gradually narrows until the rubber valve faces D and E come to rest simultaneously on their seatings, against which they are pressed firmly by the springs. Another turn or so of the ring A disengages it from its thread and the halves of the couplings are free—each presenting a blank end at the parted joint. When the halves of the coupling are brought together again the ring A is engaged with its corresponding thread and, as it is screwed home the valves are progressively opened against their springs until the full-bore flow is obtained again.

The design provides a smooth flow-path, without constriction when coupled and ensures a clean breaking action without dripping. On re-coupling, the exclusion of air is ensured. The fitting is available in a range of sizes from ¼-in. to 8-in. bore and is made with screw, bayonet or other quick-release couplings. Renewable synthetic rubber facings are used on the internal valves to ensure reliable sealing under all conditions.



Half-section of coupling showing constructional details



Self-sealing coupling with threaded ends and flange for bulkhead mounting

Standard Military Railway Bridges—5

The construction of two large bridges over the Rhine by the Allies and further notes on the American V-type bridge

THE first bridge to be constructed by the Allied Forces over the Rhine was near Wesel, and is a single-line structure. It had been designed in Great Britain 15 months earlier, and was built by American Engineer troops about 3,000 strong, aided by 500 civilians; the work was completed on April 8 within 10 days of the driving of the first pile, and opened for traffic on April 9. The work involved building a 1,752-ft. bridge across the river—1,074 ft. of it over the water gap—a 463-ft. bridge over the Lippe Canal close by; laying some two miles of track; and remodelling Wesel and Buderich yards.

Approximately 2,400 men were employed in the assembly and construction of the main bridge. Some 620 piles had to be driven to form the pier foundations, each 70 ft. long and driven about 30 ft. into the river bed. The girders are in most cases carried by British standard trestling resting on the pile caps. There are 23 girder spans, of which 22 are 75 ft. long, and each consists of four rolled-steel beams one metre (3 ft. 3⅜ in.) deep. The vertical ribs seen in our illustration, which look like angle stiffeners, are part of a system of temporary bracing. The one odd span is of 85 ft., and in it the number of r.s.bs is increased to six. These large beams were rolled in Luxembourg and the piles and timbers were cut in near-by forests beforehand. Night work in floodlighting was necessary to achieve this remarkably rapid construction, carried out under the handicap of a strong current and a maximum depth of water of about 30 ft., but weather conditions were favourable and there was no enemy interference at any time during construction.

Pile-driving was carried out from barges each consisting of multiple 24-ton U.S. Navy lighterage pontoons. For the pile-drivers and for crane barges and other purposes 780 pontoons were used in the building of this bridge. Five pile-drivers were in continuous service; seamules and D.U.K.Ws. were used to tow piles to them, and six Navy medium tugs moved the barges into position.

The rebuilding of the former railway bridge was considered impracticable because of its height and 3,500-ft. length, and the new bridge was, therefore, sited just below the blown road bridge some 1,500 ft. further upstream. The wreckage of the road bridge forms some protection to the new structure from floating debris. Partly-completed approach banks and tracks were also available at the new site, which is conveniently near the junction of the Arnhem-Oberhausen and Munster lines, south of the Wesel sorting yard.

2,800 ft of Bridging in Eight Days

Apart from its light standard trestle piers, this bridge can now be considered reasonably as of a standard type, as the Americans are using multiple rolled steel joists extensively for spans up to about 90 ft. In at least one other Rhine bridge, that at Duisburg, the majority of the spans are of this type. Incidentally, this 2,800-ft. structure, including a wet gap at 1,000 ft., was completed within about eight days only from the time of the driving of the first pile, a remarkable achievement. The trestle piers are supported partly by timber and partly by steel piles, and the spans include one 88-ft. navigational span consisting of six one-metre rolled steel joists, and a number of 75-ft. spans, mostly of four such joists, but also of the unit construction railway bridge deck type. Further details may be available later.

The Victory Bridge at Spyck

The Victory Bridge at Spyck, lower down the Rhine, was built by British personnel and mainly with British material. It forms a link between Cleve on the south bank and the Arnhem-Emmerich line on the north, which it joins south-east of Elten. The new bridge is about three miles downstream from Emmerich and the single line over it forms an extension of the formerly-existing branch from Cleve across the Alter Rhine to an oil refinery at Spyck on the south bank of the main river.

The Alter Rhine or Griethausen Bridge consists of one span of 342 ft. and twenty spans of 66 ft. and is a classic example of wrought-iron bridge practice in the latter part of the last century. It is remarkable that this bridge, captured intact, has only had to have the approach spans strengthened to make it serviceable for the heavier trans-Rhine traffic.

From the north bank an existing formation was used for some distance as an approach to the new bridge, but to avoid rebuilding two demolished bridges, one on the alignment for which this formation was built and the other on the Arnhem-Emmerich line, a new sharply-curved embankment has been thrown up to connect the bridge with the line to Emmerich, as shown on the accompanying sketch plan. To have rebuilt these two bridges 900 ft. of additional girderwork would have been involved.

The new bridge has six 35-ft. r.s.j approach spans, twenty-seven deck-type U.C.R.B. two-girder spans, each 75 ft. in length, and one four-girder U.C.R.B. 105-ft. through span, with the U.C.R.B. trusses in duplicate side by side. This span will eventually be used as a lifting span for enabling larger vessels to pass under the bridge, and the piers supporting it have been built to carry the lifting towers and machinery. Altogether, 1,200 tons of steelwork were erected to form the superstructure. Twenty-seven of the piers are composed of standard trestling supported by pile clusters, the latter absorbing in aggregate 457 60-ft. piles. A further six piers are in the form of trestling on raft foundations. The overall length of the bridge is 2,368 ft., of which 1,900 ft. are across the wet gap. There are 55,000 cu. yd. of earthwork in the new approaches, and 2,750 yd. of track were laid.

Method of Construction

Construction of the bridge was carried out from both banks simultaneously. On the south bank material was run out by rail over the Griethausen Bridge, and most of that required on the north bank was shipped over in D.U.K.Ws. The great bulk of the foundation work was in the form of pile driving, and as many as six floating pile drivers were in use at one time. Girder erection was by the cantilever launching method. Three 75-ft. spans at close spacing were coupled together end on, and run out on trollies until the first of the three overhung the next gap to be spanned, with the other two acting as counterweight. The leading span was then uncoupled and lowered into place. A fourth span was then coupled to the second and third and the process repeated until the 105-ft. gap was reached. To bridge this the two pairs of 105-ft. trusses (in duplicate) had coupled to them two 75-ft. trusses to act as a launching nose, in line with the inner pair of duplicated 105-ft. trusses, and all at close spacing. After the 105-ft. span had reached a position over its final resting place, the 75-ft. span was detached and both were lowered on to their respective permanent seatings, the 75-ft. span to bridge the gap beyond the 105-ft. gap.

Most of the work on this big bridge was effected in the face of most difficult weather conditions, high winds in particular hampering operations considerably. It was here that the very thorough training received by the Royal Engineer personnel at the Railway Bridging School at King's Newton (near Derby) bore fruit, as every man was conversant with each detail of the equipment and the best means of handling it in all circumstances.

As a result, although no reconnaissance of the site was permitted by the tactical situation before April 3, work was begun on April 7, the first pile was driven by the Quarter-Master General (General Sir T. S. Riddell-Webster, K.C.B., D.S.O.) three days later, and the permanent way was linked through and opened for traffic on VE+1 Day, May 9; hence it has been named the Victory Bridge.

More Details of the American V-type Bridge

Since the publication of Part 4 of this series of articles, in our issue of May 18, certain other details of the American V-type bridge, then briefly described, have come to hand. For instance, the inclination of the trusses forming a V in cross section is ¼ to 1. There is no doubt that much weight is saved by the elimination of all bottom-chord bracing in the deck span. The trusses, 9 ft. 6 in. deep, are built up in 10-ft. panels the members of which consist of standard angles and joints; the only other parts are the floor beams and stringers.

In deck structures the floor system is bolted between the top chords taking all transverse stresses, and the bottom chord is actually composed of the two truss bottom members side by side and contiguous. In through spans they are moved apart and the same floor system as in the deck spans is bolted between them. The track is carried, not directly by the top chords of the deck-type span, but by a separate system of floor beams and stringers transmitting the load to the trusses only at their panel points, thus avoiding bending moments in their top chord members.

The truss joints are made up of specially cut and bent plates welded together to form single units in such a way that none of the welds is subjected alone to tension in the line of stress, and the welding merely stiffens the joint and makes for quicker assembly. These joints produce a damping effect on the trusses and reduce impact stresses. Even the deck-type spans can be launched as cantilevers with a special launching device on the approach track.

The First Bridge Built by the Allies Across the Rhine

End-on view of the new bridge with the demolished pre-war road bridge, blown by the retreating Germans, on the right

General view of this bridge built by the American Army near Wesel, using local timber piles, British standard steel trestling, and one-metre deep multiple rolled steel joist spans rolled in Luxembourg

The Victory Bridge Built by the Royal Engineers at Spyck

Two spans of 75-ft. forming the counterweight to a third and leading span which has just been uncoupled from them and lowered into position

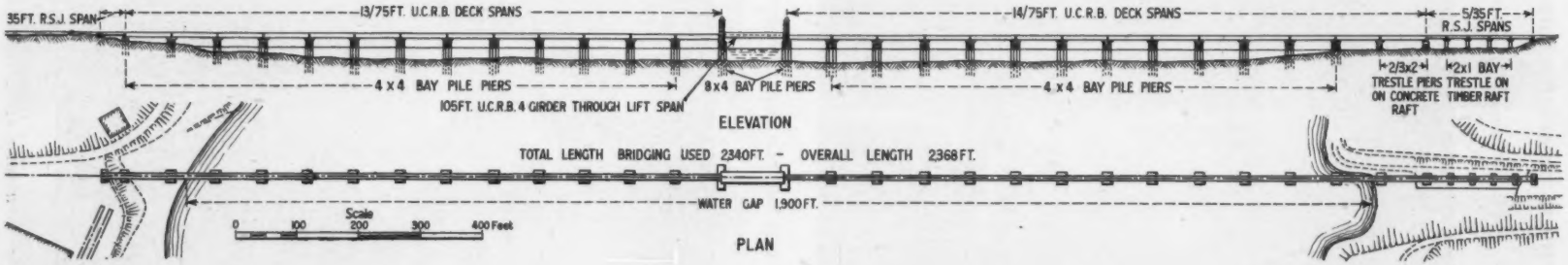
Launching 75-ft. U.C.R.B. spans by the cantilever method at night with the aid of flood-lighting

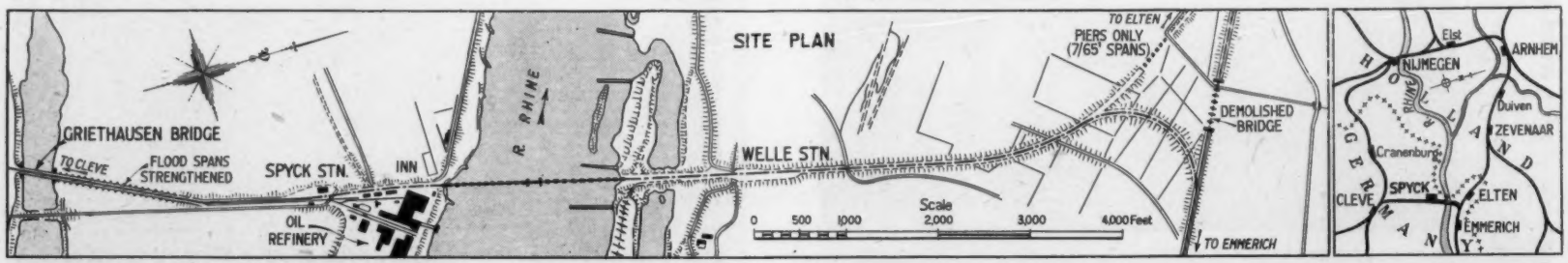
The 105-ft. duplicated-truss U.C.R.B. span being pushed out by a diesel shunting engine before launching

XUM

The Victory Bridge Built by the Royal Engineers at Spyck

General view of the bridge as completed on VE day. The width of the stream is 1,900 *ft. between water edges and the overall length of the bridge is* 0.45 *miles*


35FT. R.S.J. SPAN
13/75FT. U.C.R.B. DECK SPANS
14/75FT. U.C.R.B. DECK SPANS
5/35FT. R.S.J. SPANS
4 x 4 BAY PILE PIERS
105FT. U.C.R.B. 4 GIRDER THROUGH LIFT SPAN
8x4 BAY PILE PIERS
4 x 4 BAY PILE PIERS
2/3x2 TRESTLE PIERS
2x1 BAY TRESTLE ON CONCRETE RAFT
TIMBER RAFT
ELEVATION
TOTAL LENGTH BRIDGING USED 2340FT. - OVERALL LENGTH 2368FT.
WATER GAP 1,900FT.
Scale
0 100 200 300 400 Feet
PLAN



Elevation, plan, and site plan of the bridge. Note the Griethausen bridge over Alter Rhine on the left

Liverpool Street Station, L.N.E.R.

(See letter to Editor page 562)

View of east-side platforms, Liverpool Street Station

West-side circulating area, Liverpool Street Station

Liverpool Street Station, L.N.E.R.

(*See letter to Editor on page* 562)

East-side booking hall, Liverpool Street Station

West-side booking hall, Liverpool Street Station

Main-line booking hall, Liverpool Street Station

Tea room at Liverpool Street Station (west side) for use of the Forces

A Train of War Supplies on the Canadian National Railways

A powerful 4-8-4 oil-burning locomotive of the Canadian National Railways leaving Southwark Yards, Montreal, with a long train of war supplies

RAILWAY NEWS SECTION

PERSONAL

Mr. R. L. Baker, who at the age of 60 retired on June 5 from the Office of the Superintendent of the Line, G.W.R., Paddington, had only six days' absence through sickness in 44½ years. Mr. Baker, who served under seven Superintendents of the Line, in his spare time was Secretary of the G.W.R. Dramatic Society.

Mr. H. A. Dixon, Chief Engineer of the Canadian National Railways, has retired, and has been succeeded by Mr. Barton Wheelwright, formerly Chief Engineer of the Central Region, C.N.R.

Mr. W. H. C. Kelland, Chief Engineer, Bengal-Nagpur Railway, arrived recently in this country on leave.

COLONIAL RAILWAY APPOINTMENT

The Secretary of State for the Colonies has approved the following appointment:—

Mr. P. R. J. Cantin, Assistant Engineer, Mauritius Government Railways, to be General Manager.

The late Sir George William Humphreys, who was Chief Engineer to the London County Council from 1912 to 1930, and President of the Institution of Civil Engineers for 1930-31, formerly Colonel, Engineer & Railway Staff Corps, R.E. (T.A.), left £35,739.

The investigation which resulted in means being devised for the dispersal of fog, so that aircraft might land safely, was in the charge of Mr. Geoffrey Lloyd, the Minister in charge of Petroleum Warfare, with Major-General Sir Donald Banks as Chief Executive. Sir Harold Hartley (a Vice-President of the L.M.S.R.) was invited to preside over the scientific side, and Sir Simon Marks (a Member of the British Overseas Airways Corporation) to act as Business Adviser.

We regret to record the death on June 2, after a short illness, of Mr. Frederick George Bristow, C.B.E., M.Inst.T., who recently had been appointed Director of the National Road Transport Federation. A portrait and biography of Mr. Bristow were published in our issue of February 23 last.

BRITISH STEEL PRODUCERS' CONFERENCE

The new constitution of the British Iron & Steel Federation (see also our March 23 issue), which came into operation at the end of May, is based on membership by conferences representing manufacturers of the various products of the industry. The largest of the thirteen conferences is the British Steel Producers' Conference, comprising firms engaged in the heavy steel industry throughout the country. The British Steel Producers' Conference has adopted a constitution and appointed as first Chairman Mr. Ellis Hunter (Deputy-Chairman & Managing Director of Dorman, Long & Co. Ltd.). Mr. N. H. Rollason (Managing Director of John Summers & Sons Ltd.) is Deputy-Chairman of the conference.

Sir George Edwin Bailey, C.B.E., M.Sc., M.I.Mech.E., M.I.E.E., M.I.P.E., Chairman of the Metropolitan-Vickers Electrical Co. Ltd. since March, 1944, who, as recorded in our last week's issue, has been appointed Managing Director of Associated Electrical Industries Limited, was President of the Engineering & Allied Employers' National Federation from 1940 to 1943, and became Trustee to the Federation in 1943; and he was President of the Institution of Production Engineers from 1939 to 1942.

Sir George Bailey

Appointed Managing Director of Associated Electrical Industries Limited

Other offices which Sir George Bailey has filled include the Presidency of the Manchester District Engineering Employers' Association, in 1926 and 1927, and membership of the Beveridge Committee on Skilled Men in the Services, June, 1941. Sir George Bailey is President of the Manchester Engineering Council; Honorary Treasurer of the Manchester District Engineering Employers' Association; and a member of the North Western Regional Board (Ministry of Production). During the period of the war in Europe he was Chairman of the Local Reconstruction Panel (Manchester Area), Emergency Services Organisation, and a member of the Industrial Panels of the Ministry of Labour & National Service and Ministry of Production. The degree of M.Sc. (*Honoris Causa*) was conferred on him by Manchester University in July, 1942.

Mr. J. M. Osborne, Managing Director of Dorman, Long (Africa) Limited, has been appointed a Director of Dorman, Long & Co. Ltd.

INSTITUTE OF TRANSPORT

The undernamed have been elected by the Council of the Institute of Transport to hold office for the year commencing October 1, 1945: President: Sir Frederick Handley Page, C.B.E., F.R.Ae.S.; Vice-Presidents: Messrs. L. W. Gupwell, C. M. Hoffe, F. Rayner, C.B.E., D.S.O., T.D., T. W. Royle, C.V.O., M.B.E.; Honorary Treasurer: Mr. C. J. Selway, C.V.O., C.B.E., T.D.; Honorary Librarian: Mr. R. Bell, C.B.E.; Honorary Solicitors: Joynson-Hicks & Company; Past-Presidents to serve on the Council: Sir Alexander Gibb, G.B.E., C.B., F.R.S., R. Kelso, J. S. Nicholl, C.B.E., G. S. Szlumper, C.B.E., T.D., T. E. Thomas, C.B.E., Sir William Wood.

The undernamed Ordinary Members of Council will retire at September 30 next:—Nine Members: Messrs. R. W. Birch, P. G. Stone Clark, C. G. G. Dandridge, S. A. Dismore, Evan Evans, S. R. Geary, O.B.E., C. F. King, J. G. Merriweather, A. S. Quartermaine, C.B.E., M.C.; one Associate Member: Mr. J. R. Cowper, O.B.E. To fill the vacancies created by the foregoing retirements, the Council has nominated the undernamed:—Nine Members: Messrs. T. F. Cameron (Assistant General Manager, Works & General, L.N.E.R.), H. T. Dutfield (Director, H. & G. Dutfield Limited; Chairman, National Road Transport Federation, etc.), W. S. Graff-Baker (Chief Mechanical Engineer, Railways, L.P.T.B.) (former Member of the Council), C. Jackson, M.C. (General Manager, Plymouth City Transport), S. Kennedy (Director, Thomas Tilling Limited; Chairman, Caledonian Omnibus Co. Ltd. and Southern Vectis Omnibus Co. Ltd.; Director of eleven companies in the Tilling group), F. W. Lampitt (Chief Goods Manager, Great Western Railway), Air Vice-Marshal Sir Hazelton R. Nicholl, K.B.E., C.B., Sir J. Douglas Ritchie, M.C. (General Manager, Port of London Authority); Mr. R. O. Squarey, M.C. (Transport Officer, Imperial Chemical Industries Limited); one Associate Member: Mr. A. Watson (Secretary, London Coasting & Short Sea Shipping Control Committee, Ministry of War Transport).

Reuter reports that Sir Montague Eddy, Chairman of the Buenos Ayres Great Southern Railway Co. Ltd. and Buenos Ayres Western Railway Limited, has arrived in Buenos Aires.

We regret to record the death on June 1, at St. Mary's Hospital, Paddington, London, of Mr. Jasper Wyndham Macaldin, Deputy Chief Engineer, Way & Works, Egyptian State Railways, aged 60. Mr. Macaldin was in this country on sick leave.

The late Mr. T. Ellingford, who was for 43 years a locomotive driver on the Great Eastern and London & North Eastern Railways, left £3,962.

Mr. G. P. Binstead, Goods Agent at Worthing, is retiring from the Southern Railway after more than 52 years' service. He has spent practically all that time in the Goods Section. Mr. Binstead holds the company's 50-years Long Service Diploma.

A powerful 4-8-4 oil-burning locomotive of the Canadian National Railways leaving Southwark Yards, Montreal, with a long train

XUM

Colonel Charles H. Hamilton, O.B.E., Director of Ports & Shipping for the Cape, South Africa, whose death we recorded last week, entered the former Natal Government Railways in 1902. In 1921 he became Private Secretary to the then General Manager of the South African Railways & Harbours, Sir William Hoy, and in 1927 he was appointed Tourist Agent at Cape Town; in 1929, he became Director of the Publicity & Travel Bureau in New York. Colonel Hamilton returned to South Africa in 1931 as Operating Assistant, Cape Town. In 1935 he became Superintendent (Operating & Commercial), Kimberley, and in 1936 Superintendent (Staff), General Manager's Office, Johannesburg. He returned to Kimberley in 1938, as System Manager, and, in January, 1940, he was transferred to Pretoria in the same capacity. Later in the same year he was appointed Chairman, South African Railways & Harbours Service Commission, but shortly afterwards was seconded to the Defence Department as Director of Transport. He served on the staff of the Director-General of Transportation, Middle East, before receiving the appointment of Director of Port & Shipping, Cape Town, towards the end of 1941. The responsibilities of that post shortly afterwards were extended to include Port Elizabeth and East London; and Colonel Hamilton remained seconded from the Chairmanship of the Railways & Harbours Service Commission, with the designation of Director of Ports & Shipping for the Cape, until the time of his death. Colonel Hamilton was awarded the O.B.E. for services rendered in 1918 as Honorary Organising Secretary of the railway campaign by which £70,000 was raised for the Governor-General's Fund.

We regret to record the death of Mr. P. L. Cleary, A.M.I.Mech.E., Works Manager, Inchicore, Irish Transport Company (formerly Great Southern Railways). He was 45 years of age.

G.W.R. Appointments

Mr. S. G. Hearn, Operating Assistant to Superintendent of the Line, Paddington, to be Principal Assistant to Superintendent of the Line, Paddington.

Mr. C. W. Powell, Assistant to Superintendent of the Line, Paddington, to be Operating Assistant to Superintendent of the Line, Paddington.

Mr. H. G. W. Gaut, Assistant Divisional Superintendent, Bristol, to be Assistant to Superintendent of the Line, Paddington.

Mr. D. D. Bartlett, Assistant Divisional Superintendent, Gloucester, to be Assistant Divisional Superintendent, Bristol.

Mr. A. W. Sheppey, Chief Clerk, Divisional Superintendent's Office, Birmingham, to be Assistant Divisional Superintendent, Gloucester.

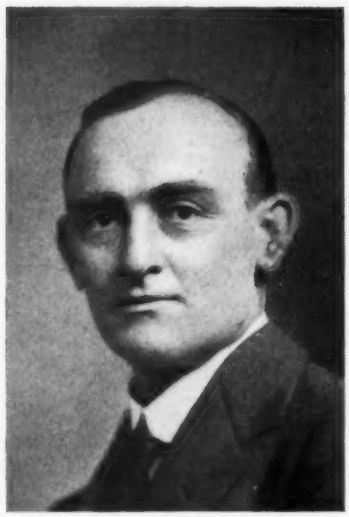
Mr. R. H. Windsor, Yardmaster, Shrewsbury, to be Chief Clerk, Divisional Superintendent's Office, Birmingham.

Mr. J. B. Colwill, Chief Clerk, Divisional Superintendent's Office, Swansea, to be Assistant Divisional Superintendent, Swansea.

Mr. J. C. A. Whitworth, Chief Clerk, Divisional Superintendent's Office, Gloucester, to be Chief Clerk, Divisional Superintendent's Office, Swansea.

Mr. E. G. Powell, Stationmaster, Gloucester, to be Chief Clerk, Divisional Superintendent's Office, Gloucester.

Mr. W. G. Hodgkinson, Outdoor Representative, Chief Goods Manager's Office (Claims & Salvage), Paddington, to be Outdoor Assistant to Claims & Salvage Agent, Chief Goods Manager's Office, Paddington.



Elliott] [& Fry

The late Colonel C. H. Hamilton

Director of Ports & Shipping for the Cape, South Africa, 1941-45

Mr. D. S. Inman, M.Inst.T., District Goods Manager, Leeds, L.M.S.R., who, as recorded in our May 4 issue, has been appointed District Goods Manager, Liverpool, joined the former L.N.W.R. in the Passenger Department at Wilmslow in 1911. After over a year's training there and in the District Superintendent's Office at Manchester, he served at various goods stations and in the District Goods Manager's Office at Liverpool, and went in February, 1914, to the Outdoor Goods Manager's Office at Manchester. From August, 1914, to May, 1919, he served in the Army, after December, 1914, with the B.E.F. in France, Flanders and Italy, with the 1st Cheshire Regiment, and subsequently on the staff of the 5th Division Headquarters. Mr. Inman returned to the Outdoor Goods Manager's Office, Manchester, in 1919, and remained there until the L.N.W.R.-L.Y.R. amalgamation in 1922, when he was transferred to the Outdoor Goods Manager's Office at Euston. On the formation of the L.M.S.R. in the next year, he joined the Goods Operating Manager's Office, Euston, and served in various sections until he was appointed Assistant District Goods Manager, Leicester, in 1928. In 1931 he was transferred to Liverpool in a similar capacity, and in 1933 was appointed Head of the Goods Revenue Section of the Chief Commercial Manager's Office at Euston. Mr. Inman became District Goods & Passenger Manager, Leicester, in 1935, and District Goods Manager, Leeds, in November, 1943.

Mr. D. S. Inman

Appointed District Goods Manager, Liverpool, L.M.S.R.

L.M.S.R. Staff Changes

The following staff changes are announced by the L.M.S.R.:—

Mr. W. N. Roberts, Assistant to District Goods & Passenger Manager, Derby, to be Assistant (Trade Advertising), Chief Commercial Manager's Office, Watford, H.Q., in place of Mr. A. Foster, retired.

Mr. G. A. Addy, Stationmaster & Goods Agent, Hebden Bridge, to be Stationmaster, Fleetwood (also in charge of Wyre Dock & Burn Naze), in place of Mr. W. Woodcock, promoted.

Mr. H. W. T. Young, Head Office Inspector, Chief Commercial & Chief Operating Managers' Office, Derby, to be Yardmaster, Hunslet Lane Sidings, Leeds.

Mr. A. Reid, Assistant (Mining), Chief Engineer's Department, Derby, to be Mining Engineer, Chief Engineer's Department, Derby, in place of Mr. W. J. Davies, retiring.

Mr. A. H. Booth, succeeding Mr. A. Reid, as Assistant Mining Engineer, Chief Engineer's Department, Derby.

Mr. W. S. Whitehead, Assistant, Chief Engineer's Department, Watford, H.Q., to be Resident Engineer, Chief Engineer's Department, Hawes, in place of Mr. M. J. Wardle, promoted.

Mr. A. E. Robson, Assistant Works Superintendent, Carriage & Wagon Works, Derby, to be Assistant Works Superintendent, Locomotive Works, Derby, in place of Mr. A. H. Nash, retiring.

Mr. A. E. Bates, Assistant to Works Superintendent (Production Planning), Carriage & Wagon Department, Derby, succeeding Mr. A. E. Robson, as Assistant Works Superintendent, Carriage & Wagon Works, Derby.

Mr. A. A. Chatterton, Fire Superintendent, Chief Mechanical & Electrical Engineer's Department, Birmingham, to be Fire Superintendent, Chief Mechanical & Electrical Engineer's Department, Derby, in place of Mr. H. S. Bateman, retired.

Mr. H. Myers, Assistant Fire Superintendent, Chief Mechanical & Electrical Engineer's Department, Birmingham, succeeding Mr. A. A. Chatterton as Fire Superintendent, Chief Mechanical & Electrical Engineer's Department, Birmingham.

Mr. A. W. Drew, Technical Assistant (Works), Divisional Signal & Telegraph Engineer's Office, Manchester, to be Area Technical Assistant, Lancaster, in place of Mr. T. H. Clark, retiring.

Mr. J. A. Ellison, Outdoor & General Assistant to Locomotive Resident Storekeeper, Stores Department, Crewe, to be Resident Storekeeper, Stores Department, Earlestown, in place of Mr. F. Bolton, retiring.

The L.M.S.R. announces also that Mr. G. Lovelady has been appointed District Operating Manager at Leeds, L.M.S.R. 21. This district will embrace the present Leeds and Skipton District Control Areas and it will be known as the Leeds District.

Mr. C. E. Holmstrom, a Special Director of Firth-Vickers Stainless Steels Limited, has been appointed Deputy Managing Director.

TRANSPORT SERVICES AND THE WAR—297

Southend Pier Railway

The electric railway on Southend Pier was reopened for civilian use at Whitsun.

Returning Evacuees

Official parties of Greater London evacuees began to return on Monday, June 4. So far, 54,000 mothers and children have been registered for return, and the arrangements provide for the transport of 3,500 a day. The return of unaccompanied children will begin about the third week in June.

London Tube Shelters

The last of the 7,600 three-tier bunks for air raid shelterers (with accommodation for 22,800 persons), which were installed in London tube stations, was dismantled on May 31. The use of these stations as shelters continued until the night of May 6.

Travel to Eire.

Sir Donald Somervell, the Home Secretary, has announced in the House of Commons, regarding travel between Great Britain and Eire, that from June 11 any British subjects normally resident in the United Kingdom will be at liberty to travel freely between Great Britain and Eire in the same way as between Great Britain and Northern Ireland. They will, however, be required to produce at the port in Great Britain a travel permit card issued by the Passport & Permit Office.

Mersey and Clyde Wartime Traffics

The full effect of the switch-over from East Coast ports to those on the West Coast, after the fall of France, is exemplified by the figures now issued of the numbers of special troop trains run by the L.M.S.R. to and from Riverside Station, Liverpool, and stations serving the Clyde area. Altogether, throughout the period of the war, 17,091 special troop trains, carrying 6,724,605 personnel, were run. Of these, 4,648 trains (carrying 1,747,405 troops) were run to and from Riverside Station, Liverpool; and 12,443 trains (carrying 4,977,200 troops) served the Clyde area. These trains were all for personnel only.

Snowdon Mountain Railway

The Snowdon Mountain Railway was reopened on May 14. From the beginning of the war a passenger service for the public was operated during the summer. In 1940 it began at Easter; in 1941 in mid-July; and in 1942 and 1943 at Whitsun. The service was suspended every year at the end of September. It was hoped to re-open the line to the public about Whitsun of 1944, but by that time the top of Snowdon was being used for certain specialised preparations for D-Day, and the Snowdon Mountain Railway remained closed throughout 1944 to ordinary passenger traffic. The hotel at the summit, which is owned by the railway company, has been used in turn by the Admiralty, the Air Ministry, the Army, and the Ministry of Supply. Once again it is serving sandwiches and tea to visitors.

Normal Lighting on the Southern

Since April 24, when authority was given to resume peacetime lighting except in coastal areas, the Southern Railway has made large strides towards restoring normal lighting to its vehicles and stations. Some 6,000 carriages, representing 300,000 windows, were blacked out, mostly on both sides of the glass. The magnitude of the task of restoring these windows to their normal conditions can be gauged by the fact that it takes roughly 10 min. a window face using a safety razor blade to remove the paint. Nevertheless, by May 29, some 186,000 window faces had been dealt with.

With the lifting of blackout on buildings, normal lighting has been restored at the principal stations. By the end of Double Summer Time in July, all stations will be completed.

The task of removing A.R.P. structures is also going ahead, with priority given to those causing the greater inconvenience to passengers or hindrance of railway working.

Stockholm-Oslo Air Line

A.B. Aerotransport resumed a regular air service between Stockholm and Oslo on May 16.

Bulgar-Jugoslav Railway Agreement

An agreement on railway communications and transit, has been signed between Bulgaria and Jugoslavia, according to a Moscow radio announcement of May 25. The railway station of Tsaribrod is to be the common frontier station.

Spanish-Swiss Communications

According to a Madrid message, the special sleeping-car train service from Cerbere, on the French-Spanish frontier, to Geneva was resumed on Saturday, May 26, after an interruption of four years. The service will be once weekly.

The Barcelona-Zurich air line service will be resumed shortly.

Repair of Slovene Railways

Work is proceeding rapidly with the restoration of traffic on all the Slovene railways. Passengers still have to walk from one train to another because of destroyed bridges. The first train from Novo Mesto reached Ljubljana on May 22. Traffic has been re-established with Jesenice, Maribor, and Trieste. Extensive repair works are in progress between Preserje and Borovnica.

Soviet Railway Repairs

Moscow has announced that Red Army railway troops have so far restored or built nearly 70,000 miles of railway track, and 140 miles of large and medium bridges, in the course of the war. These troops are now working at top pressure to restore the communications network inside Soviet-occupied Germany and already have reopened such important trunk lines as Berlin-Dresden, Berlin-Riga, and Berlin-Libau, as well as marshalling yards in large German cities.

Belgian Railways Recovering

The Belgian railway system is making a quick recovery, and, though the acute goods wagon shortage continues, it is hoped to recover part of the rolling stock removed under the German occupation. This was reported at the meeting of the board of management of the Belgian National Railways Company held recently in Brussels. Passenger trains are being increased in number considerably, and are running regularly. The acute shortage of locomotives has been overcome. The board of management approved the scheme for the reconstruction and modernisation of the Courtrai installations, destroyed during the war.

German Transport Problem

Major-General Frank S. Ross, U.S. Army Chief of Transportation, European Theatre of Operations, told a U.S.A. War Department press conference in Washington on May 23 that it would take from six to eight months to rehabilitate the German transport system to a degree sufficient to distribute the bare necessities of life. The German transport system, he said, was in a state of complete paralysis, and in its re-establishment the Germans must start from scratch. It might be late autumn before the wreckage of the Rhine bridges could be removed from the river channel, thus reopening it to navigation. For rehabilitation of German transport it was intended to use German labour and materials. Communications adequate to the service of U.S.A. troops would be maintained until the Germans were in a position to take over the task, developing from this improvised system feeder lines to supply the needs of the civilian population.

The first Allied train to cross the German border from the West in support of General Patton's Third Army was operated by a crew from the 732nd Railway Operating Battalion on the morning of February 10. It was a 12-car train loaded with ammunition and hauled by diesel engine No. 7970, and it unloaded in the Mosel Valley town of Perl, where ten days earlier the railhead had been a mass of fire scarred rolling stock and twisted rails.

The Rhine crossing began March 24. On VE Day, May 8, military railways were using bridges across the river at Duisburg, Worth, Ludwigshafen-Mannheim, Mainz, and Wesel. More than a dozen lines were open and operating. Supplies were flowing into railheads near Leipzig, Nuremberg, Regensburg, Munich, Magdeburg, and Brunswick.

The Reichsbahn and Sabotage

Acts of sabotage on rolling stock and plant of the German Reichsbahn occurred on an ever-increasing scale in the closing months of the European war. The seriousness of the position from the German viewpoint was such as to cause the Reich Ministry of Transport to issue a secret order to the Reichsbahn divisional managements calling their special attention to the measures to be taken to prevent sabotage. The full text of this secret order is as follows:—

Cases of sabotage on the Reichsbahn in respect of trains and materials have become so frequent as to make it necessary to warn traffic offices (Betriebsämter) and traffic posts (Bahnmeistereien) to devote special attention towards the prevention of these acts.

It is thought probable that foreign workers and newly-appointed emergency personnel of non-German nationality are mainly responsible for the acts of sabotage, but in many cases they may also be traced to German workers.

Observations have shown that certain acts of sabotage which can be perpetrated easily recur constantly. All offices concerned, including traffic offices and traffic posts, are therefore warned to devote their particular attention to these possibilities of sabotage.

1.—When shunting in the marshalling yards, the wagons are allowed to follow one another too closely down the shunting hump. Damage is caused thereby to loads, and often derailments also. In many cases the removal of stop shoes has resulted in derailments.

2.—Breakage of axles is caused by omitting to refill oil into the oil containers over the axles. In many cases, sand has been poured into the containers to damage the axles.

3.—Screws are loosened on the sleepers at the rail joints. Trains passing over such loosened joints tear them asunder and become derailed. If no derailment results immediately, the following trains will often become derailed.

4.—Destination labels are taken from behind the mesh of the destination board of the wagons and exchanged with destination labels from other wagons. In these cases, the wire is usually cut near

the lead seal and then twisted together again.

5.—Couplings between wagons are screwed too tightly or left too loose. In both cases they are unable to withstand the shock when the brakes are applied.

6.—To foul the compressed-air hoses, such items as sand, earth, ash, or pieces of glass are inserted in them before they are coupled.

7.—Earth is forced between the rails and the tips of points, so that these do not close properly. When the weather is frosty, water is poured on the points with the object of blocking them with ice. The result is derailments.

8.—During night-time the red handle of automatic brakes is turned to "unloaded" to switch off the brake. Vehicles which have been dealt with in this way are damaged when the train stops.

9.—Packing rings are removed from compressed-air hoses in order to damage couplings and thus necessitate extensive repairs.

10.—Telephone wires are cut in stations and signal boxes.

11.—When clearing debris after air raids, errors are made through labelling for re-use materials which are entirely unusable, or for repair materials which are obviously beyond repair; conversely, materials capable of repair have been found on scrap heaps.

12.—Repair labels and cards have often been exchanged in repair shops, thus seriously disorganising the measures taken for speedy repairs.

Since the railway police are not able to prevent all acts of sabotage, it is necessary that the offices concerned should (*a*) keep an eye on all the possibilities of sabotage enumerated above; and (*b*) "influence personnel of all ranks in an educative way and appeal to their sense of responsibility." In particular, workers must be reminded of how much depends on their will to work and to serve, especially in the present critical phase of the war.

(signed) DORPMÜLLER.

Compulsory U.S.A. Train Reductions

As an outcome of General Order No. 47, of the Interstate Commerce Commission of the United States, requiring that from March 1 last all passenger trains in which seat occupancy was less than 35 per cent. should be taken out of service, 50 trains were withdrawn on that date, but the fact that the daily mileage economised was only about 5,500 shows that most of the runs affected were short. A total of 17 railway companies was affected. The most considerable withdrawal was that of Delaware, Lackawanna & Western train No. 9 from Hoboken, New Jersey, to Buffalo, 395 miles, but this ran on Saturdays only. The Chicago, Indianapolis & Louisville has suspended trains Nos. 5 and 6 over the 325 miles between Chicago and Louisville daily; and the Minneapolis, St. Paul & Sault Ste. Marie trains Nos. 107 and 108 between Enderlin and Minot, North Dakota, 212 miles, as well as Nos. 105 and 106 between Enderlin and Glenwood, Minnesota, 136 miles.

The O.D.T. has now authorised the railways to use December, 1944, or January or February, 1945, as the basis of their seat occupancy figures, if they have none relating to the reference month originally cited (November, 1944), but does not appear in any other respect to have clarified the order, which as previously mentioned raises considerable complications in regard to the relative patronage extended to any one train over different stages of its journey. Of the cancellations already effected, 38 are estimated by the O.D.T. to be equivalent to an annual saving of 69,000 tons of coal, and to have released 22 locomotives for other duties. The Pennsylvania and Baltimore & Ohio Railroads have released 28 locomotives for other work by rearrangement of their timetables. Delegations which have appeared before the O.D.T. have made it clear that not all the cancellations are without hardship on those who previously used the cancelled trains, and it is suggested that where hardship is definitely proved, the order should be relaxed accordingly. The railways will not be permitted by the O.D.T. to operate seasonal trains to the coast and other resorts for holiday purposes only.

Derwent Valley Light Railway in War

As the Minister of War Transport has now lifted the security blackout, the accounts of the Derwent Valley Light Railway for 1944 are once again presented in their full Statutory form. In view of this, at the recent annual meeting, the chairman outlined the part the company has played in the war effort.

For the first war year or two the company was not particularly affected, and, in fact, certain important traffic was diverted to road. Then various Government Departments began to take an interest in the railway, and special trains became the rule rather than the exception. The year 1943 can be described as the peak year, when the railway carried a total of 165,203 tons, compared with 52,979 tons in 1938, or an average of 54,736 tons for the five pre-war years. The ploughing out of grassland, and the speeding-up of agriculture generally, resulted in much heavier carryings of basic traffics, as shown by the figures for 1943, compared with the pre-war year 1938 :—

	1938 Tons	1943 Tons
Grain	89	2,360
Sugar beet	5,382	8,069
Manures	3,110	7,172
Potatoes	2,363	12,298
Timber	340	1,972
Carrots	212	2,985

Military traffic continued particularly heavy right up to D-Day, and in 1943 no fewer than 105 special trains were run, all carrying important Government traffic.

With regard to war damage, the undertaking has been remarkably fortunate. In September, 1942, two U.X. bombs fell on the main line, and caused a suspension of traffic on this section for 48 hours. In other enemy raids on York, several incendiary bombs fell on the company's property, but caused no serious damage.

This light railway was called upon to contribute its full share in the war effort, and, thanks to the ready help of the L.N.E.R., in providing additional locomotive power, etc., and the extra efforts made by the staff, traffic has been carried to the full satisfaction of the Government Departments concerned, without a single mishap or complaint being received.

For the year ended December 31, 1944, no capital expenditure has taken place. The property has been maintained in good working condition and repair, so far as has been possible, notwithstanding the difficulties of labour and materials. Special attention has been paid to the permanent way during the last two years. The railway obtained P.O.W. labour, and a comprehensive programme of weeding, re-sleepering, and re-ballasting has been, and is being, effected. The standard of the permanent way at present is much more satisfactory than for many years.

The total tonnage carried in 1944 was 136,258 tons—a decrease of 28,945 tons, compared with the peak year 1943. This is accounted for by several factors. Since D-Day, the volume of military traffic has shown a steady decline, as was to be expected. Then, again, the exceptionally bad weather during harvest and throughout the summer was one of the factors that caused a considerably reduced yield per acre in agricultural commodities, which is reflected in the following figures :—

	1944 Tons	1943 Tons
Grain	2,037	2,360
Sugar beet	4,209	8,069
Potatoes	7,647	12,298
Carrots and turnips ...	1,593	2,985

In 1944 coal and coke carryings dropped to 32,102 tons, compared with 40,294 tons in 1943.

Southern Railway Summer Train Services

From May 7, the 8.18 p.m. from Victoria to Chatham starts at 8.30 p.m., and is extended to Ramsgate, calling at all stations; the 8.15 a.m. from Herne Bay to Victoria now starts from Ramsgate at 7.30 a.m. On the Central Section there is a new train at 11.45 a.m. from Victoria to Eastbourne and Hastings, direct instead of *via* Brighton, saving 36 min. as compared with the previous service; similarly there is a new 8.45 p.m., saving 40 min. to Hastings as compared with the previous 8.28 p.m., and a new 5.45 p.m. from London Bridge to the same stations. Corresponding new direct up electric trains leave Hastings at 9.5 a.m. and 5.5 p.m., and Eastbourne at 9.36 a.m. and 5.36 p.m., reaching Victoria at 11.3 a.m. and 7.2 p.m. In addition, there are new steam services from Cannon Street to Hastings at 6.3 p.m., reaching Hastings at 7.44 p.m. (non-stop to Tunbridge Wells and the fastest train of the day), and at 10.10 a.m. from Hastings to Charing Cross. From Victoria to Hove and Worthing there are new direct trains at 9.25 a.m., 11.35 a.m., and 5.45 p.m., and from Worthing there are corresponding services at 9.35 a.m. and 2.35 p.m. The Hastings and Worthing additions will relieve overcrowding on the Brighton trains, as well as accelerating the journey to and from Worthing at these hours by about 20 min. On the Portsmouth electric service there are new express trains from Waterloo at 9.45 a.m. and 9.45 p.m., and from Portsmouth Harbour to Waterloo at 11.20 a.m. and 8.20 p.m. On the Bournemouth line the 3.25 p.m. express leaves Waterloo at 3.20 p.m., and is extended to Weymouth, arriving at 7.18 p.m., 38 min. earlier than the previous connection (now cancelled) off the 3.30 p.m. train; the 4.35 p.m. down also now has a connection for Swanage and Weymouth. As is customary in summer, additional express trains run daily at 12.10 noon from Exeter Central to Salisbury, Andover, and Waterloo, and at 4.30 p.m. from Exeter to Axminster, Yeovil Junction, Templecombe, Salisbury, Andover, Basingstoke, and Waterloo, arriving at 4.10 and 8.45 p.m. respectively.

Ministry of War Transport Accident Report

Esher: Southern Railway; January 28, 1945

Colonel A. C. Trench inquired into the accident which occurred at about 8.23 p.m. on January 28, 1945, at Esher, S.R., when the 7.57 p.m. electric train, Waterloo to Portsmouth, travelling under clear signals at about 50 m.p.h., ran into the rear of the 7.48 p.m. steam train, Waterloo to Bournemouth, as it was gathering speed after being stopped at Esher home signal on the down through line. One passenger was killed, 19 injured and taken to hospital, and eight suffered minor injuries; all of these were in the electric train. The driver and guard of the steam train and the guard of the electric train suffered minor injuries. Prompt measures were taken to extricate and attend to the injured and obtain medical assistance. The weather was clear, with snow on the ground, and very cold.

The accident arose from some irregular working of the Sykes lock-and-block between Hampton Court Junction and Esher West box. (Esher East is open only for special movements). This working begins on the down lines at the starting signals for Hampton Court Junction and the home signals at that box are the last colour-light signals met with by down trains. From Waterloo to these signals colour-light signals and continuous track circuits are exclusively used. (The Sykes apparatus is electrically the same as that originally used by the L.S.W.R., but slightly modified in the method of working since the grouping. No defect in it was found to exist).

It is possible to turn down trains from local to through, or through to local, at the home signals for Hampton Court Junction, which carry junction indicators, and from local to through at the starting signal for Surbiton, at the west end of that station. Between the Surbiton starting and Hampton Court Junction home signals there is on each road an automatic signal. Rotation locking exists between these home signals and the starting signals in advance, which are released by plunging on the relative Sykes instruments at Esher. Trains are signalled by bell and describer in the colour-light area. The down local and through lines are adjacent on this part of the route. There were several train and light engine movements immediately before the collision, some involving crossing from one down line to the other, either at Surbiton or Hampton Court Junction. Of the two trains involved in the collision, the first—the steam train—stopped at Surbiton platform on the local line and was diverted there to the through. The second—the electric train—was likewise diverted there. The steam train was passed at Surbiton by an electric train to Portsmouth *via* Cobham, which was diverted to the local line and the Cobham branch at Hampton Court Junction and a light engine, which had followed this from Waterloo, was checked at Surbiton and allowed to follow the steam train thence. It was diverted to local at Hampton Court Junction and approached Esher just after the collision. While the steam train was stopped at Esher through home signal it was passed by a light engine, Surbiton to Feltham, running down the local line. Colonel Trench heard evidence regarding the signal aspects encountered by the various train crews during their movements and held that it confirmed the opinions he formed as to the most probable origin of the collision.

The driver of the Bournemouth train found the Hampton Court Junction starting signal off but the Esher distant beneath it on and stopped at the Esher home signal. So far as he could recollect the corresponding home signal for the local line was also then at danger. Rule 55 is exempted at this point, but in about two minutes he whistled and about a minute later the signal came off and he moved forward. He was travelling at about 20 m.p.h. when he felt an impact in rear, which he imagined for a moment to be due to an enemy rocket. The motorman of the Portsmouth electric train found both Hampton Court Junction starting and Esher distant signals off and estimated that he was running at about 50 m.p.h. when he saw a tail lamp ahead. Because of the curvature he thought it was a train on the local line, but approaching more closely realised it was not. He made a full brake application, let go the deadman's handle, and dropped on the floor.

The most important evidence was that given by the signalmen concerned. The signalman at Hampton Court Junction declared that he obtained "line clear" for the Bournemouth train on the through line and the light engine to Feltham on the local line at practically the same moment and that they passed at practically the same time. The Portsmouth electric was then described from Surbiton on the local line and a light engine to Guildford on the through, but on his reminding the signalman there that on Sundays the electric train was booked fast along the through line that train was cancelled off the local line describer and re-described on the one for the through line, Surbiton arranging to pass the train over to the through line there. No question of a last-minute change of route *beyond* Hampton Court Junction occurred, the signalman declared, and Colonel Trench considers that other evidence is in accordance with this statement. While he was either telephoning, or resetting his crossover behind the light engine to Guildford, which preceded the electric train out of Surbiton and which he diverted to the local line at his box, he got "out of section" signals from Esher for both local and through lines, offered the light engine on the former and the electric train on the latter and they were both accepted. He lowered his signals accordingly.

The signalman at Esher asserted that after he gave "out of section" for a train to Yeovil on the through line at about 8.10 p.m. he received no other signal whatever for that line until ten minutes later when he was asked "line clear" for, as he assumed, the steam train to Bournemouth. This was practically at the same moment as he was asked to accept the light engine to Guildford on the local, which he did, receiving "entering section" on both lines almost immediately. He declared that he had not been asked for "line clear" on the through line at the same time as he was asked to give it for the first light engine on the local line to Feltham, nor had he plunged for that line then. There had been no signals exchanged for the through line after the passing of the Yeovil train until about 8.20 p.m. He was emphatic that he had not used the release key on his Sykes instrument and was quite satisfied that all the working was regular and in order.

Inspecting Officer's Conclusion

Colonel Trench finds that, by some means, the Portsmouth electric train was admitted irregularly by signal to a block section occupied by the steam train to Bournemouth and that the signalman at Esher was ignorant of the fact that the latter train had arrived at his home signal. When he lowered it—on which that train, of course, started—he was, he assumed, doing so for a train he had at that moment accepted. This train he assumed to be the Bournemouth train, but it was actually the electric train, following it irregularly into the occupied section. Nothing was found wrong with the apparatus and Colonel Trench concludes, that despite his denials, the Esher signalman used his key, though it may well be without a definite recollection of having done so. Apart from the security afforded by the lock-and-block equipment, the bell signals should have given a further measure of protection. It is reasonably certain that "out of section" was never sent by Esher for the Bournemouth train but probable that when "out of section" was received for the first light engine on the local line at Hampton Court Junction, it was mistakenly assumed to have been received for both lines. Equally the "entering section" signal for the Bournemouth train was not noticed by Esher, as some evidence seems to support.

Colonel Trench considered the possibility that the use of the release key at Esher had taken place earlier and legitimately, as the result of a last-minute change of route of a previous movement, and that Hampton Court Junction had failed to raise the lock rod of the Sykes section instrument according to rule, so making it possible to send a train later into the section without acceptance from Esher. This would, in some ways, says the report, be a more plausible explanation, but there is no evidence to support it; moreover, this theory also implies omission or misreading of bell signals. The Esher signalman, who had a long journey by bicycle to and from his home in exceptionally cold weather may have been more tired than he realised. He was probably working mechanically and without much thought, plunged for the Bournemouth train and failed to notice—or did not receive—"entering section" for it. When he was offered the electric train he saw his through line Sykes instrument showing "train on" but the switch-hook not turned, and knowing a light engine had just passed on the local line thought he must have accepted on both lines in error. It is thought that he then used his key hastily without proper investigation of the condition of the block section. It is surprising that he did not hear the whistle of the Bournemouth train. Although primary responsibility rests on him the signalman at Hampton Court Junction cannot be absolved from blame. Colonel Trench feels sure that he had never received "out of section" for the Bournemouth train and thus was not entitled to offer the following electric one. This may have been due to misreading of the bell signal on one road as two signals for both roads. It is reasonably certain that confusion between simultaneous movements on the two lines had considerable bearing on the accident.

Recommendations and Remarks

The report discusses the arrangements in force for effecting changes of shifts and duty, but Colonel Trench does not think that hours of duty would have had any bearing on the case but for the unlucky combination of two circumstances, the dis-

tance the Esher signalman had to cycle and the exceptionally severe weather conditions on that day.

The colour-light signalling, with continuous track circuiting, installed between Waterloo and Hampton Court Junction covers the portion of this main line carrying the heaviest traffic, as, when that junction is passed, the heavy suburban services of the Epsom, Kingston, Cobham, and Hampton Court branches have all been eliminated. Nevertheless pressure of traffic continuing on the 4-track line as far as Woking remains considerable, especially at weekday peak hours. Colour-light signalling has been installed at Woking, and, but for the war, it is probable that it would have been in hand, to cover the gap between Hampton Court Junction and Woking. This work is one which deserves a high place among the signalling schemes to be put in hand after the war. The advantage lies not only in security of operation, in respect of which the Sykes lock-and-block, if properly operated, is in no way open to criticism, but in reduced pressure on signalmen, and above all, a very substantial improvement of conditions for drivers, particularly in fog. In the meantime, track circuits in rear of the Esher down home signals, on both through and local tracks, occupation of which will lock the block, are being provided.

The collapse of the trailing end of the underframe of the leading coach of the electric train was an unusual feature which invited consideration of the design and strength of the underframe in relation to the stresses imposed by such collision. The fact that impact is taken at the leading end on side buffers, while at the trailing end it has to be transferred to a centre buffer, involves a triangulated framework at the trailing end, consisting of two raking struts between centre buffer and sole bars, with a tie bar, actually two steel flats of 3 in. by $\frac{1}{2}$ in. across the base of the triangle; owing to the proximity of the wheels, the two struts have necessarily to be set at a rather flatter angle than would be chosen if a designer had a free hand, with the result that the tensile stress in the tie bars must be high in the case of any severe impact, and the holes drilled for countersunk rivets reduce the net area available by almost one half.

Colonel Trench considers that the primary failure is likely to have occurred in these tie bars, with the inevitable result that the struts forced the sole bars outwards, thus immediately weakening the whole of the trailing end of the underframe structure in a manner which led to the general collapse which occurred. The matter was discussed with the Chief Mechanical Engineer, with particular reference to the company's experience in certain previous cases of collision with this type of underframe, of which they have had a considerable number in service for almost 20 years, and it appears that in no case of collision has similar weakness been indicated; the leading end of the second coach, on which the effect of the impact must have been equal, has a flat bearing plate in place of the buffer, but is otherwise of similar triangulated construction, and this suffered no damage or even distortion. The desirability of an increase in cross section of the tie bars of the end triangulation was discussed; there are too many uncertain factors to be able to make any useful calculation of the tensile stress developed in the tie bars as the result of such an impact, but the distortion caused to all the cross members the whole length of the underframe, is evidence that the stresses of impact were distributed over its whole structure. Indeed, the structural conditions generally are not dissimilar to those of coaches fitted with the buckeye coupling, the behaviour of which in collision or derailment is, as a rule, distinctly satisfactory.

Notwithstanding these facts, it is felt that a greater margin of strength in the tie bars would have reduced the extent of the collapse of the leading coach underframe, and although the results of this one collision may not justify a definite recommendation to increase the cross section of these tie bars on existing stock, the company should look into the matter further with a view to some improvement of design in this respect.

British Railway Loudspeakers

The voice of British railways and London Transport speaking through 8,115 loudspeakers at 181 stations is daily telling the travelling public all the things they used to ask porters and ticket collectors before the war. The shortage of staff and the enormous increase in the number of people travelling, mostly services personnel, have brought this about and in its train a specialised staff, and much specialised equipment has come into being.

Early in the war it was found that women's voices were particularly suitable for station announcing and nowadays the staff mainly are women. The general principles are much the same at each station. The announcer sits before her microphone and is connected by telephone to the stationmaster's office to enable her to receive up-to-the-minute instructions. In front of her is a series of switches by which she can put in circuit any number of loudspeakers appropriate to the particular announcement which is being made.

Already the initial objects, those of telling people at what time and from which platform their trains depart, or if a train is running late, have been extended to include advice to passengers. "Please don't leave your luggage unattended," and the railways' S.O.S. service "Will Mrs. Smith, who has just arrived from Crewe, please call at once at the Stationmaster's Office." On the Southern and L.N.E.R. systems, music is played for passengers during waiting times when traffic is fairly quiet.

The horn-type loudspeaker is in some cases giving way to the multiple speaker system, which, by having louspeakers suspended overhead at intervals of 30-40 yd. all along the platform, ensures that no passenger is at any time outside audible range.

At a really big station this means using 123 speakers, as is the case at Liverpool Street Station Other improvements recently introduced included a device that automatically raises the volume of sound emitted from the speaker in direct proportion to the volume of extraneous sounds such as a train drawing in at a platform or blowing off steam.

At Westminster Station on the District line, a voice automatically starts to call the station name when an incoming train passes a certain point on the track and completes the circuit. The railways also have "walkie-talkie" amplifier and loudspeaker equipment which can be brought into use as occasion demands at stations which are not permanently equipped. Each company has its particular form of address, whether it be the G.W.R. girl saying "Paddington Train Announcer speaking," or the L.N.E.R.'s "This is Kings Cross Station, London." The Southern Railway has an adviser on voice production, and before going on the air, every girl has to pass a test in diction and elocution. The tendency of the L.N.E.R. is to standardise the voices of their announcers all over the system; the L.M.S.R., however, tends to retain the dialect of the district, thus maintaining the individuality of the place.

(*See editorial article, page* 561)

Southern Railway and the Oil Pipe Line

The Southern Railway was intimately concerned with the building of the secret petrol pipe line, which fed the European invasion and to which reference was made in our last week's issue. Of the total of 1,000 miles, the Southern Railway section covered 98 miles. This was divided into two sections, the larger of which covered 72 miles from Walton-on-Thames to Lydd. During the 1943 summer it took six weeks to lay the 3,782 tons of pipes, and necessitated the use of 216 wagons.

To ensure speedy construction this scheme was built in 6 sections with 13 railheads—Walton, Epsom, Merstham, Godstone, Edenbridge, Hildenboro, Tonbridge, Paddock Wood, Marden, Staplehurst, Tenterden, Appledore, and Lydd. The pipes were each approximately 40 ft. long and weighed 8½ cwt. They came from the Birmingham and South Wales areas, and were given priority for transit.

The transformers, weighing many tons, for the electric pumping gear, were conveyed by special trains from Horsham to Dungeness and unloaded by special cranes. This part of the work was done at night under conditions of great secrecy. So vital was the operation and yet so near to the enemy-held French Coast that special anti-aircraft batteries and radiolocation posts were established temporarily at the site of the pumping installations in case the enemy should want to look in. So well was the plan kept secret that the many Folkestone men laying the pipe line through the Romney Marshes thought they were putting in a new main drainage scheme.

The second section was a smaller one of 26 miles which took 4 weeks to construct in the summer of 1943. For this 1,357 tons of pipes, 30 to 50 ft. long, were laid from 5 Southern Railway railheads, necessitating the use of 77 wagons.

HIGH-SPEED STEEL.—We have received a leaflet from the Ministry of Supply dealing with the correct method to harden and temper high-speed steel. The performance of a large number of cutting tools could be improved by more careful hardening and tempering, and it is hoped that the leaflet will help tool makers to obtain the best results. Copies of the leaflet can be obtained from the Controller of Jigs, Tools & Gauges, M.T.C., 35, Old Queen Street, London, S.W.1.

Questions in Parliament

Pensions of Railway Staffs

Major Geoffrey Hutchinson (Ilford—C.) on May 29 asked the Parliamentary Secretary, Ministry of War Transport, whether he would agree to the railway companies increasing the pensions payable to their pensioned staff during the period of Government control to the same extent as pensions derived from public funds.

Capt. G. E. P. Thorneycroft (Parliamentary Secretary, Ministry of War Transport) stated in a written reply: The railway companies already have given supplementary allowances to certain of their annuitants whose pensions were below the minimum provided under the improved superannuation schemes. The question whether any supplementary allowance should be given to other retired railwaymen is a matter for the railway companies. Any representations they might desire to make to the Government regarding the position during the period of control would be given careful consideration.

War Services of Railwaymen

Miss Irene Ward (Wallsend—C.) on May 30 asked the Parliamentary Secretary, Ministry of War Transport, if he would arrange to inform the public of the services rendered to the war effort by the work of the railwaymen as a whole, but with particular reference to the arduous and dangerous work of making up goods trains under most difficult conditions.

Capt. Thorneycroft: Miss Ward will remember that an appreciation of the services rendered to the war effort by railwaymen —including those concerned in the making up of goods trains under enemy attack— was included in the book entitled "Transport Goes to War," produced for the Ministry of War Transport by the Ministry of Information in 1942. The Minister of War Transport will take an early opportunity of revealing a good deal more of the work of railwaymen during the war both under enemy attack and in the successful mounting of our own defensive and offensive preparations.

Miss Ward: Will the Parliamentary Secretary bear in mind that the general public has no conception of the work that has been done by the men who work on the railways?

Mr. E. H. Keeling (Twickenham—C.): Will the review which is to be forthcoming also mention the services of railway managements and the sacrifices of railway shareholders?

Capt. Thorneycroft: I hope it will refer to the work done by all parties concerned.

Viscountess Astor (Plymouth, Sutton—C.): Have not the general public shown its appreciation time after time of the extraordinary sacrifices made by men of the railway companies, not only managers, but the people on the railways?

There was no reply.

Port Dues and Railway Rates

Sir Frank Sanderson (Ealing—C.) on May 30 asked the Parliamentary Secretary, Ministry of War Transport, whether he could state the amount that the P.L.A. had increased its port rates on goods since January, 1943; the increase in the dock and harbour dues at Liverpool and the Port of Hull since the outbreak of war; and the increased rate of charges of the four main-line railway companies since the outbreak of war.

Capt. Thorneycroft: Port rates on goods at the Port of London, since January, 1943, have been increased from 100 per cent. above pre-war to 200 per cent. above pre-war. In the case of other charges made by the port authority the present increases range from 7½ per cent. to 100 per cent. above pre-war. At Liverpool the increases above pre-war are, approximately, dock rates on goods 31½ per cent., dock rates on vessels 39 per cent., harbour rates on vessels 87½ per cent. As at other railway-owned docks, rates and dues at Hull are 20 per cent. above pre-war, except those on certain coasting liners and their cargoes, which are 7½ per cent. above pre-war. Charges on the four main-line railways are generally 16⅔ per cent. above pre-war, but season-ticket rates and workmen's fares are only 10 per cent. above pre-war.

Sir F. Sanderson: Can the Parliamentary Secretary give an assurance that railway companies will receive the same consideration as other public utility concerns?

Capt. Thorneycroft: The position is somewhat complex and it is hard, and probably unfair, to make a comparison between ports like the Port of London Authority and railways and docks, because entirely different considerations apply.

Workers' Outings and Excursions

Mr. Glenvil Hall (Colne Valley—Lab.) on May 29 asked the Minister of Fuel & Power if he would consider increasing petrol facilities to enable private-hire motor-coaches and buses to take parties of workers for outings and excursions into the country or to places of interest this coming summer.

Capt. Thorneycroft (Parliamentary Secretary, Ministry of War Transport), who had been asked to reply, said: It is the Minister of War Transport's intention that road passenger services should be improved to the extent that the man-power available will allow; but as Mr. Hall will, I am sure, agree, it is necessary first to concentrate on the strengthening of the existing scheduled services, on the restoration of Sunday morning services, and on the provision of services later in the evening. I regret I cannot yet say when it will be possible to allow additional facilities for private trips or the re-introduction of excursions and tours and long-distance express services, but I hope to make an announcement on the subject shortly.

Mr. Glenvil Hall: Will the Parliamentary Secretary bear in mind, now that the basic petrol ration is being granted again to private owners, that it would be an act of justice to give the workers who have no cars a chance to share in the brighter times that have come?

Major W. F. Woolley (Spen Valley—Lib. Nat.): Will the Parliamentary Secretary give special consideration to trips for old people?

Capt. Thorneycroft: The Minister is anxious to extend facilities as soon as possible, but Mr. Hall and Major Woolley will bear in mind that it is not only petrol but manpower that is involved.

Institute of Transport

Hull & District Centre Silver Jubilee

The Silver Jubilee Dinner of the Hull & District Centre of the Institute of Transport was held at the Guildhall, Kingston-upon-Hull, on May 31. Mr. S. Hattan, Chairman of the Hull & District Centre, presided, and the principal guest was Mr. Richard K. Law, M.P., Minister of Education and Member for South-west Hull, who proposed the toast of the Institute of Transport.

Mr. Law referred to the many occasions on which he had flown the Atlantic in the course of official business in recent years, and correlated this new form of transport in his speech with the older forms. Unless we could make England really the centre of world trade and transport there was very little hope for our future. He could see no reason why we should not achieve that goal, but it could not be done easily. There was a tendency to relax after every war. Transport, trade, and Hull, were the three words which came to his mind; without the tremendous work of transport we could not have won this war. Railways had been carrying half as much again as they did before the war and in spite of all the difficulties and restrictions of the war.

To raise the standard of life and to secure equality of opportunity for all citizens of this country it was necessary to re-energise and reorganise British trade and in particular British export trade. As to the future, they could not expect for some time to be able to restore normal conditions of transport in this country because there were calls on land transport and on sea transport for the war in the East and for the people of Europe. But from now on we must begin to rebuild our transport position and in particular we must begin to rebuild it on the sea. The Government fully valued transport, and understood the problems with which its industries were faced and would do everything possible to support them. Mr. R. Kelso, President of the Institute of Transport, in his reply observed that one of the first aims of the Institute was education. As a shipping man he said that the thing which owners claimed most was freedom. What they now demanded was that the Government would take measures to counter subsidies and other forms of State assistance given by other countries. In the past they had not even asked for that measure of protection but the country must now hold its own and retain that directness of offence which we employed with such success during the war. The Government must see that shipping got fair play.

So far as internal transport was concerned he supported the principles which had been laid down by Lord Leathers. These included co-ordination, exercised so that it should not be done at the expense of any one section. The Institute aimed at getting all forms of transport together and in this it was assisted by the development of its strong educative policy.

The toast "Our Guests" was proposed by Mr. Hattan, and the response was made by Councillor K. Percival, Sheriff, who was deputising for the Lord Mayor, and Mr. George Muff, M.P.

In proposing the toast "The Transport Services" Mr. Leslie A. Downs, President of the Hull Chamber of Commerce & Shipping, observed that Hull depended largely on its rail and dock facilities. They had succeeded in establishing friendly relations with the rail interests and railway officials were helpful in putting forward conferences, information and suggestions for improving the facilities. Mr. L. Ballan, District Goods Manager, Hull, L.N.E.R., Vice-Chairman of the Hull & District Centre, replied to the toast.

Notes and News

Buses for Newcastle, N.S.W.—Trams in Newcastle, New South Wales, are to be replaced by buses after the war.

Cost-of-Living Index.—The official cost-of-living index figure at May 1 last was 103 points above the level of July, 1914, compared with 102 points at April 1 last, the same as at March 1. In May, 1939, it was 53 points above July, 1914.

Southern Railway Debenture Stocks.—The directors of the Southern Railway Company have fixed June 11, 1945, as the date for striking the balances for interest on the debenture stocks in respect of the half-year ending June 30, 1945. Payment of such interest will be made on July 2 to holders registered at the close of business on June 11.

Grand Union Canal Company.—At an extraordinary meeting of the Grand Union Canal Company held on May 28 resolutions for the redemption by the Grand Union Canal Carrying Co. Ltd. of its outstanding 6 per cent. mortgage debenture stock and for an issue of £183,599 of 3½ per cent. debenture stock of the Grand Union Canal Company were unanimously approved. This means that the new issue is in exchange for an equivalent amount of 6 per cent. debenture stock of the Grand Union Canal Carrying Co. Ltd.

Canadian Pacific Railway.—For the month of April, 1945, gross earnings of the Canadian Pacific Railway were $26,400,000, an increase of $647,000 in comparison with April, 1944. The working expenses of $23,386,000, however, were $1,538,000 greater, so that the net earnings of $3,014,000 were lower by $891,000. Aggregate gross earnings January 1 to April 30, 1945, amounted to $100,032,000, a decrease of $569,000 in comparison with the first four months of 1944, and the net earnings of $9,030,000 showed a drop of $4,642,000.

Surplus Ball Bearings.—Registered recently, a new company, the Bearings Disposal Corporation Limited, has been formed to act as agent to the Board of Trade for the disposal of surplus Government stocks of ball bearings. Associated in the new corporation are five ball bearing manufacturing companies: British Timken Limited, Fischer Bearings Co. Ltd., Hoffmann Manufacturing Co. Ltd., Ransome & Marles Bearing Co. Ltd., and Skefko Ball Bearing Co. Ltd. The Board of Trade and these companies may each nominate one of the directors of the new corporation.

Southampton Docks.—It is announced that Southampton will be the chief port in the United Kingdom for the transfer of American troops in Great Britain and on the Continent to the United States. Dredging operations are in progress to provide an additional 7 ft. of depth for the 40-ft. draught of the largest British liners. The *Queen Mary*, the *Queen Elizabeth*, and certain French vessels will dock at Southampton in mid-July, for the first time since the outbreak of war. According to Lt.-Colonel J. L. Bartley, Deputy Base Transportation Officer, U.S. H.Q., it is expected, in the beginning, that 2,000 men will be moved daily.

Canadian National Railways.—Gross earnings of the Canadian National Railways for the month of April, 1945, amounted to $35,752,000, an increase of $759,000 in comparison with April, 1944. There was a reduction of $297,000 in operating expenses, and the net earnings of $7,774,000 were higher by $1,056,000. Aggregate gross earnings for the first four months of 1945 were $136,595,000, or $3,226,000 less than for the first four months of 1944, and the net earnings of $22,452,000 showed a decrease of $2,958,000.

Collision on East Indian Railway.—It is reported that twelve persons were killed, 40 seriously injured, and 20 slightly injured in a collision on the Howrah-Burdwan chord line of the East Indian Railway on May 20, when, at about 10.30 p.m., 83 Up parcels express ran into the rear of a goods train near Manirampur Station. The injured were taken to the Howrah General Hospital by special train. Food and supplies were given to 250 passengers at Burdwan Station.

Association of Consulting Engineers (Incorporated).—The report of the Committee of the Association of Consulting Engineers (Incorporated) for the year ended April 30, 1945, records a change in the constitution of the Association whereby all corporate members of the Institution of Civil Engineers, the Institutions of Electrical and Mechanical Engineers and the Institution of Civil Engineers of Ireland, if otherwise qualified, are now eligible for membership of the Association. Membership of the Association at the end of April, 1945, totalled 188, an increase on the 1944 figure which was the highest in the Association's history.

Colvilles Limited.—Speaking at the annual general meeting of Colvilles Limited, held recently in Glasgow, Sir John Craig, C.B.E., Chairman & Joint Managing Director, disclosed that the company's wartime output of steel exceeded 9,000,000 tons. It had supplied all the steel required for several battleships and other naval vessels. It had been called on to make the largest size of bombs required for aircraft, including the 12,000 and 20,000 pounders. It had maintained almost daily supplies of steel for the railways and for road transport. Much careful metallurgical research had been required to create the higher grades of steel which the constantly increasing standards of the Services demanded.

New L.N.E.R. Rolling Stock.—A new type of two-cylinder 2-6-4 tank locomotive, classed as "L1," was on view at Kings Cross Station on Tuesday, June 5. The locomotive, which is numbered 9000, was built at Doncaster and is the first of an order for 110 of that type. It is intended to work principally on the Great Eastern section and is painted green and lined out in pre-war style. Electric lighting is provided for the headlights and in the cab. A new type of third class corridor coach was also exhibited. This is similar in design to the first class coach put into traffic at the beginning of the year, and described and illustrated in our January 19 issue. The two coaches are prototypes of the vehicles the company is to build in its post-war programme.

Proposed Formation of Southern Section, Institute of Transport.—A meeting of members of the Institute of Transport in the counties of Dorset, Hampshire, and Sussex is to be held at Southampton on June 9 at 2.45 for 3.15 p.m., to consider the formation of a Southern Section of the Institute. The meeting will be held in the conference room at the Civic Centre, and has been convened by Mr. E. Burrow (Assistant Docks & Marine Manager, Southern Railway). The Mayor of Southampton and Mr. Gilbert S. Szlumper will attend the meeting and will receive the members before its commencement. Any members in the area who have not received a notice from Mr. Burrow are invited to communicate with him, care of Southern Railway, Southampton. Mr. Burrow has been the Honorary Corresponding Member of the Council for the Southern area since 1942.

Beyer, Peacock & Co., Ltd.—The report of Beyer, Peacock & Co. Ltd. shows a trading profit for the year 1944, after making provision for taxation (including provision in respect of current year's profits) and contingencies, of £50,484

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices June 5, 1945	Prices Rise/Fall
G.W.R.				
Cons. Ord.	62¾	55	54½	+ 1
5% Con. Pref. ...	122½	114¾	118½	− ½
5% Red. Pref. (1950)	110½	104	105	—
5% Rt. Charge ...	135½	128	134½	− 1
5% Cons. Guar. ...	134-7/8	125	130½	− 2
4% Deb.	118¾	112¾	116½	—
4½% Deb.	118-1/2	114	118½	—
4½% Deb.	124½	119½	123½	—
5% Deb.	137	129½	136½	—
2½% Deb.	77	73½	77½	—
L.M.S.R.				
Ord.	34⅜	27⅞	27½	+ ⅜
4% Pref. (1923) ...	64½	55	55½	+ 1½
4% Pref.	81	72½	75½	—
5% Red. Pref. (1955)	105⅞	102	105½	—
4% Guar.	107½	99½	103	—
4% Deb.	111½	104	109½	—
5% Red. Deb. (1952)	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	10½	7-7/8	6¾	—
Def. Ord.	5-1/8	3⅜	3½	—
4% First Pref. ...	68⅝	55½	54½	+ 1
4% Second Pref. ...	35⅜	28½	28¾	+ ⅜
5% Red. Pref. (1955)	102½	97½	102	—
4% First Guar. ...	105½	96⅜	101	− ½
4% Second Guar. ...	95½	88½	95½	—
3% Deb.	88½	80½	87½	—
4% Deb.	110½	103½	108½	− ½
5% Red. Deb. (1947)	105⅝	101½	101½	—
4½% Sinking Fund Red. Deb.	107	104½	105½	—
SOUTHERN				
Pref. Ord.	80½	71⅞	72½	+ ½
Def. Ord.	26⅜	23	23	—
5% Pref.	122	113½	117½	− 1
5% Red. Pref. (1964)	117½	112½	115½	—
5% Guar. Pref. ...	134	125½	132½	—
5% Red. Guar. Pref. (1957)	115½	112½	115½	—
4% Deb.	118	110	115	− ½
5% Deb.	135½	127	135½	+ ½
4% Red. Deb. (1962-67)	111½	107½	110½	—
4% Red. Deb. (1970-80)	112	108¾	112½	—
FORTH BRIDGE				
4% Deb.	107	103	105	—
4% Guar.	106½	102	105	—
L.P.T.B.				
4½% "A"	125	119	122½xd	− 1
5% "A"	133½	128	132½xd	− 1
3% Guar. (1967-72)...	99½	98	99xd	—
5% "B"	124½	118-7/8	122½xd	− 1
"C"	72½	64½	67½	—
MERSEY				
Ord.	35⅜	33	36½	—
3% Perp. Pref. ...	72	66	71	—
4% Perp. Deb. ...	105	103	106	—
3% Perp. Deb. ...	85½	79½	84	—
IRELAND* BELFAST & C.D.				
Ord.	9	6	6½	—
G. NORTHERN				
Ord.	33⅞	19	26⅜	+ ⅜
Pref.	49	37	43½	− 1
Guar....	70	57-7/8	69¾	—
Deb.	90½	81½	88½	+ ½
IRISH TRANSPORT				
Common	—	—	71	+ ½
3% Deb.	—	—	99½	+ ½

* Latest available quotation

(£50,549). Dividends, etc., received bring the gross profit to £56,198 (£56,238). After payment of £11,729 for fees, bank charges, etc., there is a balance of £44,469 (£44,560). Debenture interest absorbs £5,172 (£5,209), and £15,000 (same) is transferred to depreciation reserve, leaving a net profit of £24,297, as compared with £24,353. In July, 1944, and January last, further arrears of preference dividend were paid. The dividend is now in arrear from June 30, 1940. Bank overdraft is less by £50,000. The company's manufacturing facilities were fully employed within the limitations imposed by availability of suitable labour.

North British Locomotive Co. Ltd.—It is stated in the report of the North British Locomotive Co. Ltd. that the profit for 1944, after placing £35,000 (£30,000) to depreciation, was £242,343 (£203,891). Deducting £150,000 (£120,000) for taxation and £50,000 (£25,000) for reserve and adding £59,037 (£50,146) brought in gives a balance of £101,380 (£109,037). As already announced the dividend on the ordinary stock is 5 per cent., the same as for 1943, and £51,380 is to be carried forward. The works have been well employed and having regard to the difficulties incidental to the general situation the output of finished work is satisfactory. Work in progress and stock is shown in the balance sheet at £1,367,155, against £865,071.

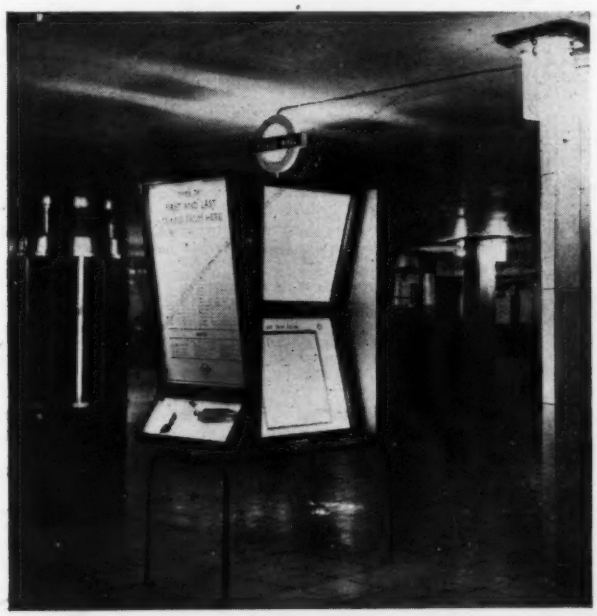
Illuminated Information Kiosk.—A novel method of displaying traffic information has been introduced experimentally in the booking hall at the Leicester Square Station of London Transport. Maps, timetables, and notices usually placed in different parts of the booking hall, have been gathered together in a display frame. This method of giving information is expected to be of assistance, not only to regular travellers, but also to Service personnel and strangers to London. The kiosk-like display frame comprises glass cases, illuminated from within. These contain an Underground map, and posters giving times of first and last trains from Leicester Square Station; bus services in the Central Area; tram and trolleybus services in the Central Area, and bus routes serving the immediate vicinity.

Central Argentine Railway Limited.—Notice is given that the Central Argentine Railway Limited will on July 1, 1945, pay interest on its 4 per cent. debenture stock in respect of the half-year ended June 30, 1945. Warrants will be posted on June 30.

Locomotive Building in India.—According to a Reuter report from New Delhi, Sir Arthur Griffin, Chief Commissioner of the Indian Railway Board, has stated that within the next five years India should be producing her full requirements of locomotives, with a possible margin for export. The Singhbhum workshops of the East Indian Railway were transferred to the Tata Iron & Steel Co. Ltd. recently and work will begin in about 18 months' time on the production of locomotives at a minimum rate of 50 a year. Within two years these workshops will be supplemented by State-owned workshops to be established at Carapara in Bengal. The opening of a third workshop is contemplated at a later date. The workshops will also manufacture boilers, at the rate of 50 in the first year, and 100 annually thereafter. The design is now in hand for a type of passenger engine which will shortly be required in quantity for service on Indian Railways.

British Insulated Cables Limited and Callender's Cable & Construction Co. Ltd.—Further details are now available of the proposed merger between British Insulated Cables Limited and Callender's Cable & Construction Co. Ltd., to which brief reference was made on page 434 of our April 27 issue. The undertakings and assets of the two merging companies, with the exception of part of the issued capital of Callender's Trust, are to be transferred to a new company entitled British Insulated Callender's Cables. It is intended to capitalise the new company at £12,500,000, of which £11,219,175 is in exchange for issued capital of the existing companies. When the exchange is effected the capital of the new company will consist of £933,334 in £1 six per cent. first cumulative preference shares, £1,045,455 in £1 five and a half per cent. second cumulative preference shares, and £9,240,386 in ordinary shares. Holders in British Insulated Cables will receive in new preference shares £1 per £1, and three new ordinary shares for each £1 of ordinary stock. Callender's stockholders will receive 13 six per cent. cumulative preference shares in the new company for each £12 of 6½ per cent. cumulative preference stock in the present company, 15 of 5½ per cent. second cumulative preference shares for each £11 of 7¼ per cent. "B" cumulative preference stock, and 27 ordinary shares for each £10 of ordinary stock.

Information for the London Traveller



An illuminated information display at Leicester Square Station, L.P.T.B.

Contracts and Tenders

Below is a list of orders placed recently by the Egyptian State Railways:—

Ransome & Marles Bearing Co. Ltd.: Ball bearings.
Hoffman Manufacturing Co. Ltd.: Ball bearings.
Ham Baker & Co. Ltd.: Sluice valves.
United Steel Companies Ltd.: Mild steel slab.
A. Balfour & Co. Ltd.: Stainless steel.
J. Blakeborough & Sons Ltd.: Steam and water fittings.
Attwater & Sons Ltd.: Electric insulating material.
Guest, Keen & Nettlefolds Limited: Hinges.
P. & W. MacLellan Limited: Butt iron hinges.
Buck & Hickman Limited: Hinges.
Stewarts and Lloyds, Limited: Boiler tubes.
Power Flexible Tubing Co. Ltd.: Tubing.
Superheater Co. Ltd.: Superheater elements.

Reuters reports that U.N.R.R.A has placed orders for 100 locomotives from British manufacturers for Greece, Jugoslavia, Poland, Czechoslovakia, and Albania. Of the further 180 (see our February 16 issue, pp. 152 and 165) ordered from United States manufacturers, 115 will be delivered by the end of the year. These orders have been placed by the U.S. Foreign Economic Administration in co-operation with the military, and it is indicated that countries in western Europe with foreign exchange available for their own purposes are not eligible under the U.N.R.R.A programme. Of the 115 locomotives scheduled for fourth-quarter 1945 delivery by United States companies, 50 will be turned out by Baldwin Locomotive Works, 40 by the American Locomotive Company, and 25 by Lima Locomotive Works. 40 of the 65 scheduled for first-quarter 1946 delivery will be manufactured by Baldwin, with Lima turning out the remainder.

Forthcoming Meetings

June 22 (*Fri.*).—The Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London S.W.1. 10.30 a.m. and 2.30 p.m. "The Unification of Screw Threads," in conjunction with the Manufacture Group. A series of seven short papers.

June 23 (*Sat.*).—The Permanent Way Institution, London Road, Temperance Institute, Southport. 3 p.m. "Concrete Sleepers," by Mr. E. Heaton, A.M.I.Struct.E., of Newton Heath.

Railway Stock Market

Although only moderately active, the prevailing tendency being to await the General Election result, stock markets have been confident in tone. Industrial shares scored numerous gains, British Funds were firm, and home rails showed a good rally, virtually recovering the heavy declines which followed the news of the date of the General Election. Argentine Rails developed an all-round advance; the immediate cause was the unexpected decision to repay Buenos Ayres Western 5 per cent. three-year notes, together with accrued interest for the 4¼ years to June 30 this year. This decision was considered in the market as indicating confidence in the future as well as improvement in finances.

Buenos Ayres Western Railway 5 per cent. notes were marked up £50 to 110 after the repayment decision. Prior charge stocks of Argentine railway companies recorded gains ranging from 1 to 4½ points, and preference and ordinary stocks also improved. The rise has been accompanied by more encouraging views as to prospects and hopes that the railways will be granted fairer treatment by the Argentine authorities, particularly in view of the improved relations between Argentina on the one hand and the United States and Great Britain on the other. Sentiment was helped by the arrival in Buenos Aires of Sir Montague Eddy, Chairman of the Buenos Ayres Great Southern.

The good rally in home rails, although reflecting the general trend of markets, was due in part to better demand; the big yields attracted a little buying, particularly as the interim dividends are due next month. The interim decisions are expected to be identical with those of a year ago, although in some quarters apparently there are hopes that the L.M.S.R. may reverse the previous policy of not making an interim payment on the ordinary stock.

Compared with a week ago, Great Western has rallied from 53¼ to 54⅜; the 5 per cent. preference was maintained at 118½, and the 4 per cent. debentures at 116½. L.M.S.R. recovered further from 26⅜ to 27⅜, the 1923 preference from 52½ to 55½, and the senior preference held last week's improvement to 75¼. Among L.N.E.R. stocks, the second preference rebounded from 27⅛ to 28⅜, and the first preference from 53½ to 55. Southern deferred was 23⅛, compared with 22⅞, and the preferred ordinary rallied from 71¼ to 72⅜; the latter attracted attention as the price can be regarded as carrying the 2½ per cent. interim payment. London Transport "C" at 67½ was fractionally higher on the week.

The recovery in junior stocks reflects the fact that stock markets are now influenced much less by political uncertainties than was the case a fortnight ago. Selling has been very moderate, but on the other hand, there has been no marked improvement in demand. The prevailing view is that over the next few weeks, markets may fluctuate moderately in accordance with views of political prospects, with attention centred on the result of the General Election.

As a result of the decision to repay the 5 per cent. notes, Buenos Ayres Western stocks naturally have been prominent in the rise in Argentine rails. The ordinary stock was 12½, compared with 10¾ a week ago, the 4½ per cent. preference rose from 25½ to 29, and the 4 per cent. debentures from 55½ to 59. Buenos Ayres & Pacific 1912 debentures were good at 28½, also the 4½ per cent. consolidated debentures at 57, and the ordinary stock improved to 6. Buenos Ayres Great Southern issues participated well in the upward trend; the ordinary were 12, against 10¾ a week ago; the 5 per cent. preference moved up from 24½ to 27, and the 4 per cent. debentures from 62¾ to 65. Central Argentine issues also rallied; the ordinary were 8½, the 4½ per cent. preference 20½, the 4 per cent. debentures 56, and the 5 per cent. debentures 65½.

In other directions, Antofagasta issues responded to market hopes of better results; the 5 per cent. preference rose to 43. San Paulo ordinary eased to 52½. United of Havana 1906 debentures rose sharply on inaccurate market reports that the long-awaited recorganisation scheme was on the point of publication. Later the price reacted, but subsequently there was a recovery to 25. French Railway sterling bonds responded to hopes that the debt service may shortly be resumed. Canadian Pacifics were prominent on American buying, and advanced to 19, compared with 16 7/16 a week ago.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1943/4	No. of Weeks	Aggregate traffics to date: Totals 1944/5	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1944	Prices: Lowest 1944	Prices: June 5, 1945	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	27.5.45	37,850	+ 8,400	21	640,240	588,140	+ 52,100	Ord. Stk.	13½	9½	11	Nil
	Argentine North Eastern ...	753	26.5.45	18,968	+ 3,437	47	871,244	727,094	+ 144,150	"	6½	4½	9½	Nil
	Bolivar	174	Apr., 1945	4,897	— 209	16	20,965	21,059	— 94	6 p.c. Deb. Bonds	18⅜	7½	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	"	19⅝	15	21½	Nil
	Buenos Ayres & Pacific ...	2,773	26.5.45	135,000	+ 13,125	47	6,461,500	5,393,500	+ 1,068,000	Ord. Stk.	7⅛	3⅜	6	Nil
	Buenos Ayres Great Southern	5,080	26.5.45	182,625	+ 27,438	47	9,830,875	8,784,750	+ 1,046,125	Ord. Stk.	14⅛	9⅛	11⅜	Nil
	Buenos Ayres Western ...	1,924	26.5.45	63,812	+ 9,937	47	3,319,375	2,804,062	+ 515,313	"	13⅜	9½	11⅞	Nil
	Central Argentine	3,700	26.5.45	174,612	+ 17,175	47	8,483,734	7,607,093	+ 876,641	"	10⅛	6⅝	7⅞	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4⅜	3	4½	Nil
	Cent. Uruguay of M. Video	972	19.5.45	40,474	+ 6,519	46	1,560,458	1,555,496	+ 4,962	Ord. Stk.	5½	4	6	Nil
	Costa Rica	262	Apr., 1945	28,642	+ 3,253	33	231,946	225,154	+ 6,792	Stk.	17¼	14½	16	Nil
	Dorada	70	Apr., 1945	30,890	+ 6,832	17	113,595	97,339	+ 16,256	1 Mt. Deb.	101	101	102½	£5 17/1
	Entre Rios	808	26.5.45	24,912	+ 5,731	47	1,168,431	971,925	+ 196,506	Ord. Stk.	6½	4½	5½	Nil
	Great Western of Brazil ...	1,030	26.5.45	20,700	+ 2,600	21	543,900	470,700	+ 73,200	Ord. Sh.	38/-	23/3	27/6	Nil
	International of Cl. Amer. ...	794	Apl., 1945	$238,269	+ $92,127	17	$816,062	$915,502	— $99,440	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1¾	¼	1	Nil
	La Guaira & Caracas... ...	22¼	May, 1945	7,407	— 1,300	21	29,823	38,153	— 8,330	5 p.c. Deb.	88	79	78½	£6 7/5
	Leopoldina	1,918	26.5.45	46,284	+ 757	21	949,174	959,409	— 10,235	Ord. Stk.	5⅛	4½	4	Nil
	Mexican	483	21.5.45	ps. 656,700	+ ps. 244,400	21	ps.12,113,700	ps. 8,414,600	+ ps. 3,699,100	Ord. Stk.	½	⅜	2	Nil
	Midland Uruguay	319	Mar., 1945	16,993	— 1,573	38	155,974	155,768	+ 206	—	—	—	—	—
	Nitrate	382	31.5.45	8,050	+ 1,720	21	76,150	81,870	— 5,720	Ord. Sh.	75/10	65/10	70/-	£3 11/5
	Paraguay Central	274	25.5.45	$60,191	+ $28	47	$2,846,186	$2,460,942	+ $385,244	Pr. Li. Stk.	79½	68	78¼	£7 12/10
	Peruvian Corporation ...	1,059	May, 1945	133,173	+ 9,672	48	1,429,695	1,209,296	+ 220,399	Pref.	9	10	9	Nil
	Salvador	100	Mar., 1945	c 202,000	+ c 28,000	38	c 1,159,000	c 1,158,000	— c 1,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	57⅜	46	52½	£3 16/2
	Taltal	156	Apr., 1945	2,910	— 1,735	42	26,280	54,660	— 28,380	Ord. Sh.	21/3	13/9	13/9	Nil
	United of Havana	1,301	26.5.45	51,282	— 3,981	47	2,556,836	2,755,924	— 199,088	Ord. Stk.	4	2½	2½	Nil
	Uruguay Northern	73	Mar., 1945	1,856	+ 106	38	14,313	13,265	+ 1,048	—	—	—	—	—
Canada	Canadian Pacific	17,028	21.5.45	1,217,000	— 4,200	19	23,537,400	23,725,200	- 187,800	Ord. Stk.	17¾	13 11/16	18¼	£5 6/8
India	Barsi Light	202	Apr., 1945	31,072	+ 2,640	4	31,072	28,432	+ 2,640	Ord. Stk.	129½	97½	129½	£3 9/6
Various	Egyptian Delta	607	30.4.45	17,324	— 990	4	53,339	57,443	— 4,104	Prf. Sh.	7 1/16	5½	6½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	63½	58	59	Nil
	Midland of W. Australia ...	277	Mar., 1945	17,935	— 7,095	39	173,275	270,532	— 97,257	Inc. Deb.	101½	99½	96½	£4 2/11
	Nigeria	1,900	24.2.45	386,036	+ 10,636	17	—	—	—	—	—	—	—	—
	South Africa	13,301	5.5.45	1,000.920	+ 108,249	5	4,962,074	4,276,017	+ 686,057	—	—	—	—	—
	Victoria	4,774	Jan., 1945	1,279,871	+ 18,572	31	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ⅛. Argentine traffics are given in sterling calculated @ 16 pesos to the £

+ Rereipts are calculated @ 1s 6d. to the rupee